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BUSINESS HISTORY

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EDITORIAL

Business History in Britain into the 1990s — *Charles Harvey and Geoffrey Jones*

ARTICLES

Corporate Behaviour in Theory and History: I. The Evolution of Theory — *C.H. Lee*

Shipping in the Port of Sunderland — *Simon Vale*

Credit Facilities and the Growth of Consumer Demand for Electric Appliances in England in the 1930s — *Sue Bowden*

SURVEY ARTICLE

British Business History: A Review of Recent Periodical Literature — *Philip Ollerenshaw*

REVIEW ARTICLE

Trade, Finance and Diplomacy: The New World and the Old in the 20th Century — *Peter Fearon*

Book Reviews

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BUSINESS HISTORY IN BRITAIN INTO THE 1990s

By CHARLES HARVEY and GEOFFREY JONES

Research in the 1980s

In the United States and Japan the 1980s was the decade of Chandler. The research agenda in both countries was cast within the conceptual framework developed by him in *Strategy and Structure* (1962) and *The Visible Hand* (1977) to explain the rise and growing importance of managerial hierarchies. Although Chandler shares many of the instincts of the traditional, archive-oriented historian, his work at last demonstrated that business history could be more than a collection of company case studies, largely bought and paid for by the corporate sponsors. Chandler generalised and forged concepts. He provided a paradigm for future research, and his reward has come in the growing citation of his work beyond the confines of business history, in the economics, sociology and business studies literature. It was fitting that the 35th Business History Conference of the United States, held at his own institution, the Harvard Business School, in the spring of 1989, was a virtual celebration of his achievements on the eve of his retirement.

In Britain, it might be argued, the impact of the Chandlerian revolution has been less marked. Leslie Hannah, in the *The Rise of the Corporate Economy* (1976), makes use of some of Chandler's ideas in the analysis of merger activity in twentieth century. He suggests that Britain lagged behind the United States in the development of modern managerial hierarchies and multi-divisional structures, before catching up in the interwar years. However, few British authors have followed Hannah in the application or testing of Chandlerian concepts. It has often been argued that Chandler's ideas are not readily applicable to Britain, and analyses of British business from the Chandlerian perspective have largely been the product of American scholars. The most notable example is the volume edited by Bernard Elbaum and William Lazonick on *The Decline of the British Economy* (1986) which has received a sceptical response in Britain. It is hard not to regard at least part of the British resistance to Chandlerianism as stemming from the same sentiments as those which motivated resistance to the 'new economic history' of the 1960s: an excessive attachment to the empirical method, innate conservatism, and an insularity of mind which breeds hostility towards innovative ideas originating abroad. Business historians with an interest in labour are almost exceptional in the way they have embraced the insights and implications of the Chandler model. Large firms with steady markets and fairly constant labour requirements are seen to have created hierarchical internal labour markets and elaborate policies aimed at the maintenance of worker loyalty and the stimulation of labour productivity. A special issue of *Business History* in 1989 was dedicated to 'Labour and Business in Modern Britain' in recognition of the vitality of work in this field.

In a perceptive article on 'The Uses and Abuses of Business History', published in this journal in 1987, Donald Coleman observes that the study of international business has been one of the few subjects in British business history to be enriched through the application of economic concepts and theories. A number of writers have made effective use of the growing economic literature on multinational enterprise. It is not immediately obvious why this field should have been so favoured. One factor may be that many of the leading British economists on international business have strong historical interest themselves. As early as 1983 Mark Casson gathered together a group of economists and business historians to consider how theory and history might be united in charting and explaining the internationalisation of business. The papers were published under the title *The Growth of International Business*, and Casson later contributed an article to this journal on the same topic.

The 1980s may be remembered for the appearance of several outstanding scholarly company histories. The first year of the decade saw the publication of the third volume of Donald Coleman's *Courtaulds* which, by covering the 1945–65 period, well and truly broke the Second World War barrier. A series of first-rate histories followed, mainly treating firms in manufacturing, extractive industries and banking. By 1990 our knowledge of Britain's business past had become far deeper and richer than was the case in 1980. Unfortunately, the physical size of many of the best business histories presents a formidable barrier to entry to the literature. The fashion has been for the production of lavish multi-volume histories; notably the two volume history of the electricity industry, the five volume history of the coal industry, and the massive four volume history of the Hong Kong and Shanghai Bank which weighs in at 3,806 pages. Many single volume studies are also very long. Terry Gourvish's study of British Rail between 1948 and 1973, which covers 781 dense pages, is not unusual in its attention to detail. But there is a hidden cost of fine scholarship: the opportunity costs of reading such studies are so high that few non-professional business historians are prepared to face them.

One means of increasing accessibility to the voluminous company history literature was tested in a special issue of *Business History* in 1987 on 'Enterprise, Management and Innovation in British Business, 1914–80'. The editors selected a 'basket' of scholarly company histories and asked six business historians to use the studies to write articles on themes such as business performance and management structures. There were plenty of methodological problems with this approach, but the favourable reaction to the special issue amongst non-specialists indicates that there is a real demand for short thematic studies utilising the vast data now stored in the specialist literature. The special issue also pointed the way for others designed to raise questions of widespread methodological interest. Issues relating to quantification in business history, for instance, were considered in another special issue on 'Business History: Concepts and Measurement' in July 1989.

An impressive feature of business history in the 1980s was its internationalisation. There has been considerable interchange of ideas and people between countries. The Japanese Business History Society took the lead in the 1970s through the organisation of its annual Fuji Business History Conference. Three or four European and American scholars are invited to each meeting to discuss a particular theme or topic. The language of the conference is English. Foreign participants have also been welcomed at conferences organised by business history societies of the United States and the Federal Republic of Germany, the Business History Conference and the Gesellschaft für Unternehmengeschichte respectively. The German and Japanese business history societies publish annual *Yearbooks* containing a selection of articles published in their countries and translated into English.

The stimulus of exposure to foreign research has not had as much of an impact on the research of British business historians. Certainly individual academics are well known abroad and respond positively to invitations to attend conferences and seminars. However, only a very limited amount of internationally comparative research was undertaken in the 1980s, although, as Ollerenshaw observes in his survey of recent periodical literature in this issue of *Business History*, by the end of the decade the situation was changing.

Considerable progress was made in the 1980s in the field of business archives. The work of the Business Archives Councils in London and Scotland has been outstanding in recent years. The Business Archives Council (BAC) was established in 1934 as a registered charity to encourage the preservation of the records of the British business community and to promote the study of business history. One of the remarkable features of the Council is the way that it has brought together the different elements in the business history community over such a long period: for much of the last 55 years it has been the only forum for historians, archivists and businessmen interested in Britain's business past.

In the 1980s the BAC sponsored surveys of the archives of individual industries, beginning with shipbuilding and banking. A volume on the brewing industry is close to completion. Lesley Richmond and Bridget Stockford's *Company Archives: The Survey of the Records of 1,000 of the First Registered Companies in England and Wales* (1986) provided a valuable new research resource. The BAC deserves praise for reaching out towards non-specialists, as illustrated by the publication of John Orbell's *A Guide to Tracing the History of a Business* (1987). The BAC recognises that business history and company archives potentially are wide-ranging in their application and following.

Other institutions and individuals have also accorded a high priority to the cataloging and preservation of company records. The University of Glasgow, inspired by its archivist Michael Moss, has accumulated one of the most extensive collections of business records in Britain. At Reading, the Institute of Agricultural History built up over the decade a collection of business records representing approximately 2,500 firms in agricultural engineering, food processing and distribution, and in addition the University Library holds the records of more than 1,000 farms. Several other centres of business history research have also acquired important collections. The University of Cambridge Library, for instance, holds the voluminous records of Vickers and Phoenix. As an instance of well directed personal initiative, Dr Jon Press deserves mention for his work, funded by the British Library, in the cataloging and preservation of the important George White transport and business finance collection at Bristol Record Office.

The only regular forum for discussing recent research in business history in Britain in the 1980s was provided by the annual Business History Seminar at the Polytechnic of Central London. This gathering, organised by Professor Derek Oddy and financed by the ESRC, has served a unique function, enabling 30 or so academic business historians to meet at least once a year. In the second half of the 1980s, the Economic History Conference, the annual meeting of the Economic History Society of Britain, also began to recognise the growing interest in business history amongst its members. The 1986 conference, held at Cheltenham, had the first session exclusively devoted to business history, with five papers on comparative and international topics. The 1990 conference, to be held at the University of Liverpool, will feature another session on 'The Future of Business History', with papers on methodology and research problems in the subject.

Institutional Developments of the 1980s

Perhaps the most distinctive achievement of British business history in the 1980s was the creation of distinctive business history units or centres. Individual business historians had for long been located in departments of economic history, history, and economics, at many British universities, colleges and polytechnics. Most of the individuals styled themselves *economic* rather than *business* historians. The lead toward a higher profile was taken by the London School of Economics where the Business History Unit (BHU) was established in 1978 on the basis of an appeal to the business world which raised nearly £250,000. The Unit was launched with the intention of shifting business history from a narrow concern with company history toward addressing issues of substantial economic and historical consequence. The BHU enjoyed a mushroom growth in the early 1980s, attracting young scholars, holding conferences and launching a bi-annual free *Newsletter*.

As usual, pioneering was no easy task. Two problems in particular created difficulties for the BHU in the 1980s. First, the research projects based there had few links between them, not even to the point of using the Chandler model as a standard point of reference. Most projects lacked a solid or explicitly stated methodology. The largest project based there, the ESRC-funded five volume *Dictionary of Business Biography* (1984–8), generated a reference work of great value for anyone interested in the history of a single businessman, firm or industry. But too little attention was given to the principles of selection of subjects or common elements in dictionary entries, and this must limit the value of the project database for social scientific analysis. A second problem was financial. The BHU increased its staff by taking on research projects funded by foundations or companies. However, once the original projects ended, the question of redeployment of the fine cadre of business historians which had been accumulating became pressing. The Unit took on an increasing number of commissioned histories (of Glaxo, the British Bank of the Middle East and Rowntrees) which met the overheads but deflected from the original intent. By the spring of 1988 most staff had left. The financial situation had become so dire that the BHU had reached the point of closure before a last minute donation of £75,000 from Sir Alistair Pilkington ensured its survival.

The formation and initial success of the BHU caused business historians elsewhere in the country to consider the advantages of pooling expertise and creating a corporate identity. Several institutions recognised that some form of research unit or centre, albeit drawing on existing staff resources, might be used as a vehicle to attract funds and otherwise advance the cause of business history. And since the BHU could not hope to cover the entire spectrum of British business, in particular regional business communities, ample scope existed for other research centres to assert their identity. The polytechnics in particular were quick to recognise the possibilities. At Coventry a Centre for Business History was established within the Department of Politics and History in 1984. Two years later, a group of business and labour historians at Bristol Polytechnic gained approval for a similar unit in its Department of Humanities. Both Centres have been very active within their regions, conducting archival surveys and producing important studies of local firms, businessmen and industries. The Coventry Centre is in the process of reorganisation following the departure of staff to senior positions elsewhere. The reconstituted Centre will cover both Business History and Business Policy and will be based in the Department of Business Studies.

In 1988 Cardiff Business School formed a Business History Research Unit specialising in accounting history. The most dramatic institutional development, however, came at Glasgow University with the establishment of the Centre for Business History Research in Scotland in October 1987. Glasgow already boasted the first Professorship in Business

History, dating from 1979, and a very large collection of business archives. An entrepreneurial fund-raising campaign produced a capital fund of £1.25 million for the new Centre and a further £300,000 trust fund for business archives. If the LSE was the leading institution in British business history in the early 1980s, by the end of the decade the mantle had clearly passed to Glasgow.

Elsewhere, the institutional development of business history has taken a looser form. An important development was the formation of the Centre for the History of the Science, Technology and Medicine at Manchester University in 1987. The Centre includes the Manchester-Wellcome Trust for the History of Medicine and the British National Archive for the History of Computing. There were (in mid-1989) three business historians active in the Centre focusing upon the history of science and technology in business. At Reading University, an informal Business History Group was formed in 1988, allying the business historians and industrial economists in the Department of Economics (who had a long-standing interest in international business and corporate growth) with the agricultural historians of the University's Institute of Agricultural History.

Towards the end of the 1980s it came to be recognised that business historians might profitably liaise and collaborate in various ways. The Business History Research Unit at Cardiff and the Business History Centre at Bristol Polytechnic regularly share ideas at seminars and generally keep in close contact. Business historians at the University of East Anglia and the BHU have joined forces in a project on the brewing industry. Business historians at Reading and Lancaster decided to hold an annual series of conferences. The first of these, on the British government and business competitiveness in the twentieth century, was held at Reading in October 1989.

These institutional developments give some indication of the dynamism of business history in Britain in the 1980s. This is reflected also in the growing number of courses in business history available to students at undergraduate and postgraduate level. Business history is by no means wildly popular or generally available, but the subject has made considerable ground. Business history courses have been taught at Manchester Polytechnic since 1969, and are now fully internationally comparative. Ealing College of Higher Education began a business history course in 1976 and there are now first and second year courses in the BA (Business Studies) degree. Bristol Polytechnic first introduced business history to social science students in 1979 through the inclusion of a popular optional course on the 'Business and Entrepreneurial History of Britain and the United States since 1850'. The course was replaced in 1984 by one on 'Business, Labour and the State in Modern Britain', and business history is also offered to students reading for a BA in Humanities under the title 'World of Work'. At Coventry Polytechnic between 70 and 80 first-year students in Business Studies are exposed to business history, and a further 80 students reading for a BA in Business

Law take a course on 'Business Institutions' which covers much historical material.

Within the university sector, undergraduate business history courses have flourished in Scotland. By the end of the 1980s, 40 final year undergraduates and 40 MBA students were taking courses in modern business history at the University of Edinburgh. At Glasgow, a course in 'British Business History since 1850', integrating a considerable amount of new work on the theory of the firm, was also attracting considerable numbers. In England, the University of East Anglia had a course on the 'Modern Corporation'. In 1988 Brunel University launched a new second year economics course, a half of which is dedicated to business history and is jointly taught with staff from Reading University, while in the same year Reading transformed one of its first year economics papers into a business history course. Within the University of London, both the LSE and Royal Holloway and Bedford New College have well-subscribed courses in modern business history. The University of Lancaster has two linked third year optional courses in business history which are taken by economists, historians and some geographers and management studies specialists. Both 'Business Enterprise and Industrialisation' and 'Business Enterprise in Modern Britain' attract about 30 students each year.

Yet, despite the spread of business history courses in the 1980s, many institutions elected not to introduce business history into the curriculum, even when they had the expertise. Cambridge has at least four prominent business historians in the History Faculty, but the only teaching in the area (in 1989) was a third year option on 'Business, Literature and Society, 1750–1950'. Bristol, Liverpool and Manchester are other universities with considerable business history expertise that have failed to develop teaching in the field.

The failure of business history courses to take off at British business schools must also be mentioned. In the 1980s, the ESRC funded Research Fellows at the London Business School and the Management Centre of the University of Bath, but neither experiment was successful. The business schools – with some exceptions, such as Cardiff – have shown little interest in the subject. The contrast with the Harvard Business School, which has at least six business historians on the staff and where a business history course is the most popular 'elective' on the MBA course, is striking to say the least.

In common with practically all academic subjects, the number of graduate students working on business history probably declined over the 1980s. In the middle of the decade the ESRC-linked studentship scheme was used to good effect by the BHU to create a cadre of graduate business historians. The cruel shortage of academic appointments, however, blocked their further advancement: by July 1989 only one of the ten British students who started business history PhDs at the LSE held a permanent university lectureship, at Edinburgh. Yet, despite such discouraging statistics, some PhDs in business history were still being undertaken at the end of the 1980s. In 1989 Glasgow and Cambridge had four students each working on business topics, and there was a scattering of students elsewhere. The Centre for the History of Science, Technology and Medicine at Manchester, for example, had an ESRC-funded student working on the history of the computing industry in Britain. Two new PhD studentships in business history will be available at the University of Liverpool, partly financed by Pilkingtons.

No specialist taught courses in business history were available in the 1980s. The most extensive offering was at Bristol Polytechnic where students reading for an MA in Historical Studies could specialise in business history following a common course in historical theory and practice. In October 1990 the University of Reading will launch a new MA in International Business History. The new course, taught by staff of the Department of Economics and the Institute of Agricultural History, will enable students to combine courses in modern comparative and international business history with more theoretical and conceptual work in economics and business strategy.

Business History into the 1990s

It would be futile and pretentious to map out a course for British business history in the 1990s. Business historians will continue to write company histories, and such scholarly studies are to be welcomed because they put into the public domain a wealth of data about the issues of central concern to business historians. It seems likely, however, that some British companies will follow the trend seen in the United States over the last few years of commissioning business historians to write on just one aspect of corporate development. Two recent examples of this genre are David Hounshell and John Kenly Smith, *Science and Corporate Strategy: Du Pont R & D, 1902–1980* (1988), and Peter Temin with Louis Galambos, *The Fall of the Bell System* (1987). These studies of research and development and the causes and consequences of deregulation respectively are, like conventional company histories, archivally-based and rather long. They are also case studies of individual firms. Yet the books are much more focused than conventional studies which attempt to survey all aspects of corporate development. As such they are much more usable for teaching and comparative research.

It seems likely that the 1990s will see attention shift from the Chandler-inspired focus on management structures and strategies to new or wider themes. The spur to generalisation provided by Chandler has been extraordinary in its impact, but the time surely has come to extend the boundaries of generalisation. One area badly in need of such generalisations is entrepreneurship, a subject much discussed in the 1950s and 1960s, but somewhat subsumed by the Chandlerian emphasis on the manager. There are signs of a renewed interest in entrepreneurship in the economics, management and business strategy literature. Business history data on entrepreneurs has expanded considerably in recent years, not least through the publication of the Scottish and English biographical dictionaries. There is a wealth of business history material on the origins, functions and contributions of the entrepreneur which should afford generalisation through the application of a Chandler-style conceptual framework.

Innovation is another subject which is attracting considerable attention from industrial economists in particular, and here business historians with detailed knowledge of the pattern of innovation in particular industries potentially have a large contribution to make. Business historians of the sixteenth, seventeenth and eighteenth centuries have been gingerly moving towards this subject in the 1980s. Christine Macleod's *Inventing the Industrial Revolution: The English Patent System, 1660–1800* (1988) and Julian Hoppit's *Risk and Failure in English Business, 1700–1800* (1987) discuss different aspects of innovation and risk taking – and their consequences – in provocative ways. In a challenging article in the *Economic History Review* (1986), Donald Coleman and Christine MacLeod have recently opened up a debate on the long run obstacles to innovation in British business. There is a clear need for systematic research on innovation which tackles the major problems of causation, consequence and differing national experiences.

Business historians themselves will be confronted with the challenge of technological innovation in the 1990s. Research and teaching methods in history, as in the social sciences, are being transformed by the availability of cheap and portable computer power, specialist input and output devices, sophisticated software for database creation and management, quantitative analysis, text management and investigation, cartography and computer-assisted learning. Moreover, computing historians make extensive use of the wider technologies of applied information technology such as data modelling techniques for database design and project management methods. Computer conferencing, bulletin boards, and the use of electronic mail, nationally and internationally, are rapidly becoming standard academic tools. Historical research, correspondingly, is becoming more methodologically self-conscious, and collaborative comparative research involving the application of computer-based methods is certain to increase. Business historians are well placed in Britain to take a lead in these development. There are seven academics with a research interest in business history on the United Kingdom Branch Committee of the Association for History and Computing, including the Convenor, Secretary, Treasurer, and Heads of the Research and Conference sub-groups. In association with this journal, the Association is organising a large scale collaborative research project on 'Provincial Business Communities in the United Kingdom, 1870–1914'. The results of the project will be published in a special issue of *Business History*.

Internationally comparative studies in business history are sure to receive a further fillip from the publication of Chandler's *Scale and Scope* in 1990. Ambitious international comparative research projects and conferences are high on the agenda of business historians in Japan, the United States, the Federal Republic of Germany and Sweden. Moreover, the students of the 1990s at British universities and polytechnics will only have known Britain as part of the European Community. Hopefully they will take an interest in the business past, but almost certainly they will require answers to a number of key contemporary questions. Why at the end of the twentieth century are there three major economic power blocs – Japan, the United States and the European Community? Why, within the European Community, is high technology industrial research clustered in southern Germany, northern Italy and eastern France? Why has Britain concentrated upon the supply of financial, tourist and retailing services? Many more questions of this type, which demand international research if satisfactory answers are to be found, are sure to attract scholarly attention. Unfortunately, the successful pursuit of comparative research, and even comparative teaching, will require a much higher level of funding than has been available to the academic community in Britain in the cash-starved 1980s.

Developments within economics during the 1980s have made possible much closer intellectual contact between economists and business historians. The past neglect of business enterprise in mainstream economic theory made it difficult to apply theoretical insights in the analysis of real-life business situations. The inner workings of the firm were neglected, and even textbooks on industrial economics were founded on production and cost functions, profits maximisation, and the structure, conduct and performance paradigm. The situation is very different now, as the article by Clive Lee in this issue of *Business History* describes so well. The work of Ronald Coase and Oliver Williamson on transactions costs, and the firm as a governance structure for complex exchange transactions, opened up a body of theory of direct relevance and value for business historians. Principal/agency theory, reassessments of the entrepreneur from both 'Austrian' and neo-classical perspectives, the theory of information costs and implicit contracts, have all addressed issues of fundamental concern to business historians. Moreover, this literature is increasingly being made available in non-technical language accessible to even the least theoretically trained of business historians. Martin Rickett's *The Economics of Business Enterprise: New Approaches to the Firm* (1987), for example, is an excellent textbook covering the new work on the theory of the firm. Lee's article makes a further contribution. Business history in the 1990s has a body of usable economic theory on which to draw, and stands ready to draw upon it.

The closer association of business history with economic theory may well stimulate a debate about the 'home' of business history as an academic discipline. In Britain, the subject has grown up as a subdiscipline of economic history. Elsewhere this has not been the case. In Japan, the business and economic history communities have developed separately, and until recently were kept apart by strong ideological differences. Many Japanese business historians are located in Faculties of Management and Commerce. The situation in the United States is far more complex, but certainly the business historians at the business schools such as Harvard are closer to business strategy and management than economic history. Several of the younger American business historians, for example, have DBSs rather than PhDs. In Britain, there are signs of an emerging difference in approach between a minority who regard business history as essentially business strategy or industrial economics with a time dimension, and a majority who see it as a subject, with more or less strong links to economic history, which can make a novel and vigorous contribution to understanding the past. To some extent, at least, the direction and methodology of British business history in the 1990s will be determined by the outcome of this debate.

Concluding Remarks

When the first number of *Business History* appeared in 1958, the first words, fittingly, where those of T.S. Ashton. The great man did not attempt to justify the study of business history in terms of its contemporary relevance or the magnitude of its potential contribution to historical scholarship. It was enough for Ashton to observe that insufficient attention had been paid in the past to the accomplishments of businessmen, and to note that the intensive study of business records might yield much of value to the 'parent study' of economic history, since 'it is in the individual firm, rather than in wider organisations, that we can observe the operation of economic forces at first hand'. Ashton, of course, shared the view that held sway in Britain for so long, that business history was essentially a grass roots approach to economic history, virtually synonymous with company history and business biography.

The narrow identification of business history with the manufacture of case studies has been under attack ever since the 1960s. The point has been made many times that case studies have not been produced systematically according to a carefully specified research design; hence there is a persistent problem of generalising on the basis of non-representative samples. Moreover, the process of synthesis and generalisation is made all the more difficult by the fact that company historians have not applied a uniform set of definitions, concepts, or measures of performance, in their research. Thus, it is often reasoned, alternative research paradigms must be applied in business history research if the subject is to make an important contribution to scholarship in history and the social sciences.

There has been no shortage of ideas for alternative approaches to business history research. The industry is the favoured unit of analysis for studies of competitive behaviour and technological change, encouraging scholars to consider the fortunes of the small as well as the large, the failures as well as the sucesses, and the backward as well as the innovators. Comparative and thematic studies, drawing on material from several firms, several industries, or several countries, equally are seen by many scholars as a fruitful route to generalisation and a higher lever of understanding of the forces stimulating industrial change. Other scholars see the need for entrepreneurial studies to focus more on business communities and less on the individual businessman. In this way, it is argued, we might gain a more textured view of capitalism which recognises localities, regions and internationalism besides nation states and metropolitan élites. And whatever unit of analysis is favoured, it is felt by many that business history has plenty of scope for improved technique: for a more fluent integration of the empirical with the theoretical; for a more widespread employment of advanced statistical procedures; for the construction of more computerised databases which might form a general resource for the business history community as a whole.

The unleashing of the self-critical spirit in business history has been on the whole a very positive thing. Many fine industry, comparative, thematic and community studies have been produced in recent years. Theory, and to a lesser extent quantification, have made their mark, to the extent that business historians have found a good deal of common ground with colleagues in departments of economics and business studies. It is incomparably easier to produce a quality reading list for a course in British business history than it was ten years ago.

One of the main challeges of the next decade must be to continue the process of making the findings of business history research accessible to students and colleagues in other disciplines, as Philip Ollerenshaw argues persuasively in his literature review. We have as yet no textbook for British business history, and too few synthetic studies of all kinds. We need more short books, summarising the latest research, which can be plundered at not too great a cost in time by the non-specialist reader. We need more articles that provoke and challenge the prevailing wisdom. All too many half-baked and simplistic notions about the history of British business remain in circulation. It is the task of the historians of British business to offer more refined and satisfying general explanations of the national business record. The editors of *Business History* welcome articles which essentially are an intellectual exploration, synthesising the findings of others, as well as carefully crafted presentations of the results of primary research.

In 1990 business history in Britain has reached the stage of vigorous youth, if not maturity. It is a progressive and dynamic subject, full of opportunities. This journal looks forward to participating in the challenges and excitement which await us in the forthcoming decade.

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CORPORATE BEHAVIOUR IN THEORY AND HISTORY: I. THE EVOLUTION OF THEORY

By C.H. LEE

The era of modern economic growth, which has now stretched over at least two centuries, generated enormous changes in the structure and wealth of the most advanced economies. Not least amongst those changes was the evolution of the productive processes in response to burgeoning demand, technological advance, and the organisational adjustments required to accommodate activity on a greatly increased scale. One prominent feature of this change was the emergence of the giant corporation in the course of the nineteenth century, commanding resources and economic power on a scale previously possessed only by governments. In the present century, these huge corporations have extended their activities over an increasingly wide range of products, nations, and functions, so that they bear little resemblance to their original form or antecedents as small family firms or partnerships of a century or two earlier. The change in the structure of the business enterprise wrought by the process of modern economic growth has been accompanied by a parallel evolution in theoretical studies seeking to explain the aims, functions, and nature of such organisations. It is the purpose of this survey to trace the development of such theoretical work on the firm and its market environment in order to delineate the issues and problems which theorists have sought to confront. A second survey will examine the evolution of studies in business history, the empirical counterpart to this theoretical approach.

Perfect Competition and Equilibrium

Prior to the 1930s, which constituted a watershed in theoretical studies of the firm, little attention was paid to the nature of the business firm itself. The theory of perfect competition assumed that the market was composed of a large number of small firms each of which followed a single-minded, and rational, policy of profit maximisation. Such firms could be owned and operated by a single individual or a small number of partners, and could thus be envisaged as one dimensional entities with a single, simple purpose. The focus of analysis was thus concentrated not on the firm itself but on the market environment in which it operated. Under perfect competition, it was assumed, the large number of firms in any given industry would all enjoy free entry into the market, but would have to accept the price determined by the interacting preferences of many buyers and sellers. In such a situation, the profit maximising level of output was determined as the volume at which marginal cost equalled price. In the long run, an industry which generated profits would attract additional firms, increasing productive capacity and thereby lowering market price and profitability. Long run equilibrium would be attained when the number of firms in the industry was just sufficient to prevent either the making of profits or the incurring of losses. At that point the price would be equal to the average cost of production. Conversely, in an industry in which losses were being sustained by some firms, their exodus would contract productive capacity, increase market price, and reduce losses so that the industry would also tend towards equilibrium. In the long run, therefore, competition guided any industry towards equilibrium.

By the 1930s, it had become apparent that this basic model failed to describe reality as regards either the firm or the market. The notion of a simple profit maximising firm failed to reflect the complexity of the large corporations which had emerged during the previous 50 years. The notion of competitive equilibrium was undermined by Sraffa who demonstrated that monopolistic tendencies could lead to equilibrium which was monopolistic rather than competitive.[1] Market imperfections such as incomplete knowledge or barriers to entry had been recognised but deemed transitory and unimportant. But they could be stable and cumulatively influential. In the 1930s, theoretical explorations broke away, in several directions, from the constraints of perfect competition.

The Theory of the Firm: Ownership and Objectives

The seminal study of Berle and Means, investigating the nature of the modern corporation, drew attention to the fact that ownership had become divorced from control, a development inherent in the growth of the firm. The great size of the modern corporation, and the enormous concentration of wealth it represented, could only be formed by combining the wealth of innumerable people, since such resources lay beyond the means of all but a handful of individuals. But such a large number of owners could not all effectively participate in running a business, so that managerial control had to be devolved. This crucial separation of function, between ownership and risk on the one hand and control on the other, radically changed the nature of the firm because the best interests of the two groups did not necessarily coincide. Indeed they could even be diametrically opposed to each other. The shareholder might retain the aims of the small partnership, believing that the business should maximise profits, as far as that was consistent with a reasonable amount of risk, and that as large a share of the profits should be distributed in dividends as was consistent with the continued operation of the business.[2] But the shareholder had largely lost the control by which to impose such a strategy on the firm. This had fallen to managers who might have quite different goals and alternative strategies by which to maximise their personal advantage. As Galbraith graphically expressed it. 'In f[illegible]ctacularly in recent times, profit maximisation has come to be for those with the power of decision. Management pay, bonuses and perquisites, golden parachutes in case of loss in a takeover struggle, are set by management for itself. These costs are not subject to any minimising calculation; they are enhanced by the most orthodox of classical motivation to serve the interests of the organisation'.[3]

The recognition of this divergence of function and interest between managers and shareholders has generated a number of managerial models of the firm which seek to explain the strategy of the corporation under managerial control. One of the earliest of these argued that managers would be more likely to follow a strategy of sales maximisation rather than profit maximisation. Baumol offered several reasons in support. Managerial earnings are more likely to be linked to sales than profits, relations with both financial institutions and employees will be easier if a firm is expanding, and increases in sales will strengthen the competitive position of the firm thence bringing prestige and other rewards to its managers. Managers will thus seek to maximise sales in the long run and the generation of profits, which will be a means to that end, will comprise an important endogenous part of the strategy. Indeed, long run profit maximisation need not be inconsistent with a strategy of long run sales maximisation.[4]

An alternative managerial strategy might be to seek maximum growth by balancing the rate of growth of demand for its product with the rate of growth of its supply of capital. Marris argued that the appropriate utility function for managers should be derived from the growth rate of demand, constrained by the need to protect job security, while the utility function for shareholders would be derived from the growth rate of capital supply.[5] The equilibrium position will be attained, and maximum balanced growth achieved, when the growth rate of demand is equal to that for capital. This particular theory tries to reconcile the different interests of owners and managers, although there are several stringent conditions which must be met in order to achieve this.

Williamson also stressed the utility function of the managerial group as the key to its maximising behaviour which, he argued, will be oriented towards the salaries, status, prestige and security of that group. The generation of profits represents a hedge against dismissal. Paramount importance will be given to the preference for expenses of the managerial group, so that even if a firm did maximise profits part of that gain would be transferred to executive perquisites.[6]

Similar in approach to the managerial theories are behavioural theories of corporate activity. The approach suggests that firms comprise coalitions of groups whose interests often conflict with each other. Such interest groups include managers and shareholders, but also workers, customers, suppliers and financial institutions each of which has a peculiar set of aims and interests. The aims of the firm will, therefore, be a compromise between the various and conflicting aims of the interest groups, between profit maximisation and managerial expenses, between cost minimisation and increasing wage rates, and so forth. While the goals of the firm will be set by senior management in establishing targets for production, sales, profits, and market share, they will be shaped and modified by interdepartmental bargaining as each group seeks to maximise its own goals. Senior management will try to reconcile these conflicting interests, and attempt to satisfy as many of the specific goals as possible. The firm thus becomes a satisficing rather than a maximising organisation, and this behaviour is quite rational given the internal and external pressures exerted upon it.[7]

The Theory of the Firm: Organisation and Structure

The recognition that firms comprise interest groups with differing aims, as reflected in managerial and behavioural theories, necessitates investigation of the organisation itself and questions the adequacy of the simple profit maximising assumption in perfect competition. A further set of disquieting issues were raised in the 1930s in a now-celebrated paper by Coase. In competitive markets the allocation of resources and the formation of prices are both determined by the interplay of demand and supply. But Coase drew attention to the fact that the large corporation undertook the co-ordination and allocation of resources within its own framework and thus superseded the function of the market. 'The operation of the market costs something, and by forming an organisation and allowing some authority (an "entrepreneur") to direct the resources, certain market costs are saved. The entrepreneur has to carry out his function at less cost, taking into account the fact that he may get factors of production at a lower price than the market transactions which he supersedes, because it is always possible to revert to the open market if he fails to do this'.[8] The firm thus appears as an alternative to the market as a means by which resources can be allocated.

Perceiving the firm in this way draws attention to its organisational characteristics. In fact, Coase's work was acknowledged but largely unexplored until fairly recently since the ideas it proposes do not fit comfortably into the framework of neoclassical economics. But the recent work on transaction costs theory has built directly on Coase's paper. According to this theory, the firm is perceived not simply as a production function but rather as a governance structure. Indeed, both firms and markets are defined as alternative governance structures either of which can be used depending on which best economises on transaction costs, that is the costs incurred in operating the economy. This model has been most fervently advocated and most fully explored by Oliver Williamson. It rests on the basic assumption that behaviour is rational but limited, or bounded, by incomplete information so that strategic planning must be imperfect. Furthermore, both individuals and groups are opportunistic and may seek to break agreements to further their own ends. These two fundamental tenets of behaviour have important implications for the firm. 'The organisational imperative that emerges in such circumstances is this: organise transactions so as to economise on bounded rationality while simultaneously safeguarding them against the hazards of opportunism. Such a statement supports a different and larger conception of the economic problem than does the imperative "maximise profits"'.[9]

The firms most likely to adopt internalisation of markets will be those with a high level of asset specificity, that is their assets will be invested in forms such as plant and machinery which are not easily or quickly changed into some other form. Firms will also internalise factor markets for commodities which have high transaction costs. Much stress has recently been placed on knowledge in this context, with the key to internalisation identified as the linkage carrying information between production, marketing and research. Internalisation can also involve the replacement of a contractual relationship between firms by unified ownership, or the creation of a new internal market to encompass an external economy. Amongst the advantages of internalised markets have been included an increased ability to plan and control production, especially in relation to essential inputs, the exploitation of market power through discriminatory pricing, the utilisation of transfer pricing, and the avoidance of both bilateral markets and uncertainties in the transfer of information.[10]

Prior to the development of internalisation theory, it was assumed that the main justification for vertical integration lay in the achievement of technological economies. But emphasis on transaction costs stresses the importance of internalising long term contracts, the advantages of holding a monopoly of supply in intermediate markets, quality control, and transfer pricing. The firm must, therefore, have both a technological and contractual rationale but with pride of place being held by the latter. Vertical integration is thus an essential and important feature of the internalisation process.

Another facet of Williamson's work on the organisation of the firm has been concerned with the problem of control. The notion of bounded rationality implies that an expanding firm will face difficulties in effectively transferring information between various departments as its operations become more complex. This will, in turn, require an increasingly graded hierarchy, but the increase in the number of layers of organisation will eventually reduce the effective control exercised by those in most senior management.[11] In order to explain and resolve this difficulty, Williamson drew on Chandler's work on the emergence of big business in nineteenth-century America. Chandler can thus claim to be the only historian to have exerted a significant influence on theoretical work on corporate behaviour.

Chandler's empirical work on the development of the corporation had led him to stress the advantages of internalisation in reducing costs and increasing productivity. He also found that the organisational hierarchy which resulted from internalisation did cause a loss of control at the top in the uniform (U-form) and centralised system. In terms of transaction costs this system had reached the bounds of rationality

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and was no longer functioning efficiently. The solution was found in the multidivisional corporation (M-form). This type of organisation divided its activities amongst a number of quasi-autonomous sectors which were overseen by senior management whose role was to provide strategic planning, performance monitoring, and resource allocation. The M-form corporation appeared in the 1930s when the structure was adopted both by General Motors and du Pont.[12] Modern conglomerate enterprises are essentially expanded M-form organisations with an added internal capital market. Such an organisational structure is well designed to economise on bounded rationality and to attenuate the threat of opportunism. 'Operating decisions were no longer forced to the top but were resolved at divisional level, which relieved the communication load. Strategic decisions were reserved for the general office, which reduced partisan political input into the resource allocation process. And internal auditing and control techniques which the general office had access to served to overcome information impactedness conditions and permitted fine timing controls to be exercised over the operating parts'.[13] The M-form organisation thus provided the solution to the problem of control loss without diminishing the advantages gained from internalisation. Transaction costs theory provides the means by which these organisational developments can be modelled and understood in both organisational and economic terms.

The Theory of the Firm: Growth

The evolving structure of the business corporation was, of course, closely linked to its growth. During the past two centuries business firms have experienced massive growth, reflecting both the great increase in aggregate production and the increasing concentration of that output. Those stimuli encouraging the growth of the firm, and the obstacles standing against the concentration of production into a single gigantic corporation, have thus attracted much attention.

Coase argued that firms would increase in size where '(a) the less the costs of organising and the slower these costs rise with an increase in the transactions organised; (b) the less likely the entrepreneur is to make mistakes and the smaller the increase in mistakes with an increase in the transactions organised; (c) the greater the lowering (or less the rise) in the supply price of factors of production to firms of large size'.[14] The limit to growth, Coase believed, would be imposed by decreasing returns to scale of the entrepreneurial function as internal organisation became more costly, and this would return transactions to the market beyond a certain level of operation. Two decades later, Penrose described business expansion in terms of seizing opportunities to use existing resources more efficiently, and thought the limits to expansion would be imposed by managerial ability, problems in controlling product and factor markets, and the greater risk and uncertainty involved in operating on a larger scale.[15]

Through his description of the growth of large corporations in the United States, Chandler revealed the importance of internalisation in that process and showed how the organisational transformation from the U-form to the M-form type of structure removed important constraints on the growth of the firm. In the telegraph system and distributive trades, integration brought greater scheduling efficiency through improved information flows. In manufacturing, mass production and vertical integration increased the throughput and increased productivity by cutting unit costs. As firms accumulated substantial fixed costs, that is a high level of asset specificity, they sought to control both raw material inputs and marketing. Vertical integration thus linked mass production with mass distribution. Manufacturers who required specialised or technical marketing services, such as machine makers like Remington, McCormick and Singer, found it advantageous to include such operations within their own organisation. All strands of Chandler's empirical explanation of corporate growth are consistent with the emphasis on internalisation found in transaction costs theory. 'Modern business enterprise became a viable institution only after the visible hand of management proved to be more efficient than the invisible hand of market forces in co-ordinating the flow of materials through the economy. Few mergers achieved long term profitability until their organisers carried out a strategy to make such integration possible and only after they created a managerial hierarchy capable of taking the place of the market in co-ordinating, monitoring and planning for the activities of a large number of operating units'.[16]

Much recent attention has been lavished upon the multinational enterprise as the manifestation of the largest business corporation. Why should a firm establish itself in a foreign country rather than make some trade agreement with local competitors? While a cartel is superior to an arms-length agreement between two competitors because it allows the creation of a sales syndicate, the cartel has the disadvantage that it can be undermined by cheating on the part of either partner or both of them. So an integrated multinational corporation represents a superior solution for the division of markets between two monopolists situated in different countries, given that such a merger will provide access to economies of scale.

Some of the early theoretical explorations of the multinational corporation suggested that it must possess 'an internally transferable advantage, the possession of which gives it a quasi-monopolistic opportunity to enter host-country markets. Barriers to trade and barriers which prevent host-country firms from duplicating this advantage mean that direct foreign investment is frequently the preferred form of exploiting the advantage in foreign markets'.[17] Specific monopolistic advantages claimed for multinational operations have included reductions in transport costs, avoidance of tariffs, exploitation of cheap supplies of local labour and the advantages of superior production and managerial skills. Dunning's eclectic theory of multinational business development has emphasised three types of advantage. The locational advantage is given by the different costs of manufacturing in different countries together with differential tax and tariff conditions. Ownership advantages are of two kinds. The first includes new products and processes peculiar to the firm, together with managerial and marketing skills. The second refers 'essentially to economies of integration within the firm achieved through the common ownership of production activities located in more than one country. Since these latter advantages have no market outside the MNE they must be internalised'.[18]

Casson has taken issue with Dunning's assertion that internalisation is a form of ownership advantage; which, he argues, runs counter to Coase's insight that internalisation is the *raison d'etre* of the firm.[19] Following this tradition, Casson has argued that 'a necessary and sufficient condition for the existence of an MNE is that there is a net benefit to internalising an intermediate product market linking activities located in different countries'.[20] This perspective places multinationals into the framework of transaction costs theory. Vertical integration is superior to market purchase of inputs where firms have substantial fixed costs or have a continuous flow technology which can be disrupted by industrial action. The development of new technologies, creating new products and altering the pattern of labour use, are more easily accommodated within a central planning system. Transfer pricing between countries enables the multinational to avoid exchange controls, and to reduce its tax bill and tariff costs by adjusting the location of production. The multinational firm also offers its shareholders the opportunity of diversifying investment since its operations in many countries generate income in several currencies.

From the perspective of transaction costs theory, the multinational business can be seen as the logical outcome of the process of internalisation, together with the adoption of the M-form organisation, which enabled firms to develop into conglomerates and then multinationals. How beneficient this has been is still hotly debated. Two of the pioneers of theoretical work on multinationals have taken diametrically opposite views of their effect. Hymer has argued that multinationals have been a device for channeling wealth from the economies of the Third World into the rich industrial countries, while Kindleberger has hailed them as a means to greater economic efficiency in the international economy, generating competition by destroying domestic monopolies and overcoming governmental efforts to inhibit market forces.[21]

Market Structure and Imperfect Competition

Changes in the analysis of the firm during the past half century have been accompanied by a similarly active debate about the market environment within which the firm operates. In drawing attention to the heterogeneous nature of products in competitive markets, and the fact that this subdivided markets into specific interest areas, Sraffa showed that a firm might choose to cut prices to attract customers away from rivals or that it might choose to protect its own monopolistic advantage. In the early 1930s Robinson and Chamberlin followed this lead by exploring the characteristics of markets in which monopoly elements could be found and in which, therefore, competition was imperfect.[22] Chamberlin investigated the market in which producers made similar but not identical goods. Such a market contained elements of monopoly since the product of any given firm cannot be exactly reproduced by a competitor. It also contained elements of competition since close substitutes to the firm's products were available and, in the long run, there was free entry into the industry. These modifications to the market environment must influence the strategic decisions of the firms acting in it.

The theory of monopolistic competition helped revive interest in oligopoly, a market characterised by few producers rather than many, and in which barriers to entry inhibit new firms which are considering entering the market. Much attention in recent decades has concentrated on oligopoly which seems to describe a market form common in the modern economy. Early versions of oligopoly theory posited that manufacturers produced homogeneous goods and that firms did not co-operate with each other. Later variants of the theory have included differentiated products, collusion between firms and, in the dynamic versions, firms have been allowed to react to the strategic moves of competitors. The conditions which allow or prevent entry to the market have been debated, as has the effect of advertising. This can be co-operative in increasing demand for the products of the entire industry, or predatory in deflecting demand away from the products of rivals. Oligopoly constitutes a market structure in which firms compete not only through price, but in which product, quality, advertising, research, new products, and new types of production are all important.[23]

The identification of a variety of market structures within the bounds of perfect competition and monopoly has focussed attention on the extent and effectiveness of competition. The theory of perfect competition proposes that any departure from this state represents a diminution in market efficiency and thence welfare. This idea underlay nineteenth-century anxieties about monopoly, and the anti-trust legislation passed in the United States. But not all theorists have taken a hostile view of monopoly. To Schumpeter, monopoly was both a temporary state and a dynamic force in the growth process. Technological advance, he argued, provided the entrepreneurial firm with a market advantage which constituted a temporary monopoly. But this advantage would be eroded eventually as other technological advances transferred the monopoly advantage to another firm. These changes were the gales of creative destruction by which, Schumpeter believed, economic progress was achieved. Kirzner developed a similar view, although he rejected the notion that monopoly was the vehicle of progress. But he did admit that entrepreneurial skill in competition could achieve a monopoly position. Eventually others would be able to replicate the product, but the time taken to catch up would confer a temporary monopoly.[24] Galbraith has also taken a charitable view of monopoly. He argued that the establishment of a monopoly would stimulate the creation of a countervailing power to moderate its influence. This might take the form of labour forming trade unions to bargain with employers about wages and conditions, or it might be manifest in the emergence of large scale customers with sufficient power to influence the monopolist's decisions.[25]

Nevertheless, monopoly has attracted a great deal of criticism. Leibenstein argued that the level of X-inefficiency, the extent to which the economic system operates below maximum efficiency, would be high under monopoly. Such an organisation would comprise many groups who were inclined and able to resist change, having attained for themselves 'well established effort positions' at levels well below maximum effort.[26] Under monopoly, he argued, pressure to attain high levels of performance would be absent because the extra cost of X-inefficiency could be passed on to customers in higher prices. Much the same was true of those enjoying any element of monopoly. 'Through product differentiation, selling costs, and advertising expenditures, the monopolistically competitive firm seeks a partial safe haven from the rigours of competition'.[27]

Baran and Sweezy described the giant corporation under monopolistic competition as ideally suited for the generation of increasing profits by exploiting cost-reducing innovations. 'If we provisionally equate aggregate profits with society's economic surplus, we can formulate as a law of monopoly capitalism that the surplus tends to rise both absolutely and relatively as the system develops'.[28] This thesis differed from the customary assumption of Marxian theory that profits will tend to fall. But the Baran/Sweezy version of monopoly capitalism also contained the seeds of its own destruction. 'It tends to generate ever more surplus, yet it fails to provide the consumption and investment outlets required for the absorption of a rising surplus and hence for the smooth working of the system. Since surplus which cannot be absorbed will not be produced, it follows that the normal state of the monopoly capitalist economy is stagnation'.[29]

The degree of competitiveness in different markets has been the focus of much recent work, and has generated some unexpected results. The theory of repeated games suggests that, even when oligopolists do not co-operate, a collusive equilibrium can be reached. Nor is it necessarily the case that markets with large numbers of firms will generate more competition than those with few firms. The theory of contestable markets suggests that even under monopoly conditions a market might function competitively. 'A monopolist could persist in its monopoly position by pre-empting potential rivals. But in doing so, the monopolist is behaving, at least with respect to his R & D policy, much as competitors would. A slight change in assumptions, however, alters this conclusion in a dramatic way; if the research project is to be undertaken over a number of years, it is possible that the incumbent firm will begin that research project, and push it to the point where the firm has a commanding lead. The firm can then behave like a monopolist, simply threatening potential entrants that if they do attempt to engage in R & D the firm will respond by increasing the speed of its research to ensure that it captures the patent'.[30] Clearly the degree of competitiveness in all markets is more complex and uncertain than has often been assumed.

The importance of oligopoly in the modern economy where a small number of firms, each aware of and influenced by the actions of each other, dominate a market has concentrated much attention on barriers to entry. Bain developed the thesis that oligopolistic firms would use pricing policy to deter potential entrants from the market. Other barriers would be constituted by the capital requirements of the potential entrant, the relatively low costs of existing firms based on advantages such as the control of raw material supplies or long term contracts, and the difficulties of post-entry competition as market prices were forced down to attract the extra demand required to accommodate an additional supplier.[31] Bain believed that economies of scale provided established oligopolists with an important advantage, as did product differentiation. But even oligopolistic markets may contain inherently competitive pressures. It has recently been argued that a low cost firm will sell at its lowest price to deter entry, while a high cost firm will produce the level of output at which marginal revenue equals marginal cost in order to keep its price to a minimum. The threat of new entrants may thus persuade oligopolists to set their limit price at an even lower level than the price which is just sufficient to deter the new entrant.[32]

The Entrepreneur

While the entrepreneur has been a familiar figure in the literature of business history and economic history, until recently his role in economic theory has been minimal. The formulation of the theory of the firm on the assumption that the firm should calculate its cost minimising and profit maximising positions and act accordingly precluded any role for the entrepreneur. 'There is no room for enterprise or initiative. The management group becomes a passive calculator which reacts mechanically to changes imposed upon it by fortuitous external developments over which it does not exert, and does not even attempt to exert, any influence'.[33] For most of the past century, the entrepreneur has existed only on the wilder fringes of the theoretical literature.

An early, and to historians familiar, attempt to incorporate the entrepreneur into an explanation of development was made by Schumpeter. The entrepreneur was the agent who introduced and sustained growth by disturbing the even flow of equilibrium activity. He created growth and disequilibrium by producing new commodities, or existing commodities by new methods, by finding new markets or raw materials, or by introducing organisational change. Schumpeter imbued the entrepreneur with special qualities which enabled him to break with traditional practice to establish new activities through vision, industry and a strong motivation to establish a 'private kingdom'.[34]

Heroic as this figure is, the entrepreneur has remained almost totally excluded from the mainstream theoretical literature until quite recently. Only when theorists admit disequilibrium or inefficiency can a role be found for the entrepreneur. Leibenstein's X-inefficiency model has already been mentioned, and its thesis that individuals or groups may work at less than maximum efficiency. In order to achieve the highest level of efficiency some motivational input will be required, thus allowing a place for the entrepreneurial function. Leibenstein argued that because the details of a labour contract were never fully determined, the individuals and groups concerned were allowed scope to modify their tasks and adjust their efforts. This process of selective rationality enabled workers, at all levels in an organisation, to choose to function at levels of performance below those assumed by maximising neoclassical models.[35] Leibenstein's entrepreneur had to act as co-ordinator to overcome imperfections in the links between inputs and outputs, between various internal markets and, in effect, to create and control the firm.[36]

Like Schumpeter, and a fellow adherent to the Austrian tradition of free market economics, Kirzner has also depicted the entrepreneur as a crucial figure in the economic process. But in this variant of the theory, the entrepreneur's function was to push the economy from disequilibrium towards equilibrium rather than in the opposite direction as Schumpeter hypothesised. Kirzner argued that the economy was normally in a state of disequilibrium, a condition which created opportunities for the entrepreneur to make profits. The successful entrepreneur would be able to recognise and exploit these opportunities. This competitive intervention in the market would force prices down and squeeze the profit making opportunities out of the system, thereby generating the kind of market equilibrium achieved under perfect competition. Thus competition and entrepreneurship were indissolubly linked. 'In other words, I am asserting that entrepreneurship and competitiveness are two sides of the same coin: that entrepreneurial activity is always competitive and that competitive activity is always entrepreneurial'.[37]

Kirzner's entrepreneur is an integral part of the economic system working within the market system, while Schumpeter's entrepreneur appears as a *deus ex machina* bearing some disruptive innovation from outside the system. Kirzner's notion of entrepreneurship is firmly vested in the individual. 'The essence of individual entrepreneurship is that it consists of an alertness in which the decision is embedded rather than being one of the ingredients deployed in the course of decision making. This sets it altogether apart from being a class of productive factor'.[38] Like much recent work, Kirzner's thesis emphasised the importance of information. Market disequilibrium represented a state of widespread ignorance. The learning process improved the quality and quantity of information within the market, and the quickest learners were the entrepreneurs who, thereby, perceived the opportunities for profit.

Increased knowledge stimulated competition and tended towards the reduction of profit. Perfect knowledge, of course, has always been regarded as a necessary characteristic of the perfectly competitive market tending towards equilibrium.

The emphasis on information reveals an important difference between Kirzner and other theorists with similar perspectives. While Kirzner agrees with Knight and Schumpeter that entrepreneurs comprise a special class who are, in essence, the true producers, he does not accept Knight's view that profits are a fortuitous gain from unanticipated change but regards them as the reward for deliberate acts of market opportunism. This thesis lies firmly in the Austrian tradition with its emphasis on the individual and the market. In fact there is little room in Kirzner's work for exploration of the firm as an organisation in contrast to Knight's stress on employment contracts and risk allocation, and to Schumpeter's emphasis on the link between the firm and financial institutions.[39]

Kirzner rejects all theories of imperfect competition as worthless variants on the market equilibrium model, and disputes the notion that the market system is wasteful of resources as, for example, was suggested by Galbraith with regard to advertising expenditure. Since part of the entrepreneurial function is to alert consumers to the availability of goods and services, thereby increasing the stock of information in the market, so advertising is a legitimate and necessary part of that process. By equating competitiveness and entrepreneurship, Kirzner is able to dismiss the validity of barriers to entry and describe monopoly as a temporary phenomenon in which a producer is able to insulate himself from competition.

A more recent exploration of entrepreneurship has taken issue with Kirzner. Casson places his theory in the Schumpeterian tradition in which entrepreneurs create and destroy markets. 'Schumpeter's analysis accords well with our concept of the market-making firm. Our analysis also recognises the extent to which entrepreneurs make the system. Entrepreneurs themselves depend on markets, notably markets for inputs of market-making services. These markets are in turn made by other entrepreneurs'.[40] By contrast, Kirzner's entrepreneur is perceived as simply responsive to market signals. The debate will doubtless continue. But the tardy reappearance of the entrepreneur in theory after such a long absence is consistent with current interests in the organisation of the firm and the popularity of the transaction costs approach.

The Evolution of Theory

The body of economic theory which deals with the behaviour of firms and markets has experienced considerable growth and change during the past half century, and especially in recent decades. The perfectly competitive market filled with a host of profit maximising firms has been revealed as a special case of rather minor importance. The perception of the firm as an organisation, containing a variety of interest groups with different aims and ambitions and in which ownership is often divorced from control, has focussed attention on the nature of that organisation and the means by which small family firms can develop into conglomerate and multinational corporations. Similarly, the recognition of different market structures, operating upon corporate behaviour and in turn modified by that behaviour, has opened up many new issues. And some old issues have reappeared. Market imperfections and the organisationally complex firm allow a role for the entrepreneur in modern theory.

The theory of corporate behaviour is more diverse, more realistic, more complex, and less complete than it seemed in the 1930s. This fact, together with the important issues with which it deals, should persuade the business historian that it can no longer be dismissed as abstruse or unreal. There is much in current theory, the debate it generates, and the insights it achieves, to warrant the close attention of the business historian.

NOTES

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SHIPPING IN THE PORT OF SUNDERLAND 1815–45: A COUNTER-CYCLICAL TREND

By SIMON VILLE

> From the entrance of the harbour up to Hylton Ferry, the banks of the Wear, on both sides, are crowded with shipbuilding yards, and docks, presenting, in a most striking point of view, an exemplification of the industry and expertise which have so effectively conduced to the prosperity of the port. Scarcely an opening on the shore of the river, or a nook or crevice in the limestone rocks which overhang it, can be found in which a ship of large or small dimensions is not in the course of erection. Sunderland is emphatically the first shipbuilding port in the world. (William Fordyce, *The History of the County of Durham* (Sunderland, 1857), p.509.)

This paper seeks to explain why the port of Sunderland ran contrary to the general picture of depression experienced by much of the English shipping industry in the several decades after the end of the French Wars in 1815. The wartime prosperity of the shipping industry, based upon high freight rates and profits, gave way to a deep and prolonged depression which afflicted much of the industry, with only temporary interruptions, for several decades. A parliamentary committee of 1833 investigated the difficulties that the shipping industry, together with manufactures and commerce, had been experiencing. It highlighted the problems of declining ship ownership and shipbuilding, unprofitability, bankruptcy and foreign competition. One witness before the committee expressed the feelings of many shipowners: 'a man that has a ship of 200 tons and nothing else to depend upon is gradually going to ruin'.[1] This came as little surprise to members of the committee. What did strike them, however, was the extent to which Sunderland emerged as an exception to the general picture of gloom. Here, shipowning and shipbuilding were together booming on a large scale as nowhere else in the country.

Shipowning and shipbuilding were more susceptible than most industries to cyclical fluctuations in output. As a capital goods industry, shipbuilding was vulnerable to the so-called 'accelerator' effect whereby a relatively small change in the demand for shipping would have a much expanded impact on the demand for new ships. Moreover, the industry produced non-divisible 'lumped' capital which militated against gentle fluctuations in output. The demand for shipping fluctuated in accordance with a range of influences including the season of the year and the size of harvests. Shipping and shipbuilding were influenced by general economic fluctuations particularly insofar as they affected the demand for imported goods. The relationship with the general economic cycle, however, was far from perfect. Like other capital goods industries the cyclical expansion of shipbuilding tended to be concentrated into the later stages of the trade cycle and continued to increase beyond the upper turning point.[2] The long investment gestation period and the continued employment of apprentices encouraged many shipbuilders to continue building through the early part of a depression. In many ports there were few alternative business opportunities, which led many to continue investing in and operating vessels when returns were low or even negative.

Political considerations helped shape the pattern of cyclical fluctuations in the shipping industry. During the French Wars of 1793 to 1815 freight rates rose sharply as the expansion of the transport service increased the demand for merchant shipping while the supply was constricted by the convoy system and short run inelastic conditions in shipbuilding. Although some costs also rose, particularly ship repairs and seamen's wages, high profits could be made. This author has demonstrated elsewhere the manner in which one London shipping firm, Michael Henley & Son, took advantage of such opportunities to create a personal fortune.[3] Even the experienced Henleys found great problems surviving in the changed circumstances after 1815. The booming wartime conditions had led to an overexpansion of the merchant fleet and, with the release of many vessels from the transport service and the ending of the convoy system, many owners found difficulties securing employment for their ships. Freight rates, profits and capital values fell sharply. By 1833 freight rates were about 40 per cent and ship prices 30 per cent lower than a decade earlier.[4] The Reciprocity Treaties in the mid-1820s worsened the problems by ending the protection of British shipping from foreign competition in a number of trades. Shipbroker William Woolcombe concluded, 'I have seen many depreciations and slack times but I never saw it so depressed as at present'.[5]

Cyclical fluctuations in the shipping industry are clearly indicated by the figures for shipowning and shipbuilding. Both increased sharply during the French Wars and afterwards stagnated. The volume of British tonnage built rose from 57,000 in 1790 to a peak of 115,000 in 1800. Shipowning in the United Kingdom increased from 1.4 million tons in 1793 to 2.5 million tons by 1815.[6] The national total of shipbuilding grew only five per cent through the period 1814–32 while shipownership actually contracted by six per cent. If Sunderland, which ran contrary to the national experience, is excluded this gives a contraction of nine per cent for both activities. In the decade from the mid-1830s to the mid-1840s shipowning figures began to grow once more. Shipbuilding rose to a sharp cyclical peak in the late 1830s before returning to more moderate growth in the 1840s. Historians have accurately identified these long trade cycles in the shipping industry, but their national studies have concealed the sharp local and regional deviations from this norm.[7]

Between 1814 and 1832 shipbuilding declined at most major ports particularly traditional centres of the industry on the Yorkshire coast such as Scarborough, Whitby and Hull. The small output of Yarmouth doubled while the larger industries at Newcastle and Liverpool yielded some growth. This was dwarfed by the 71 per cent expansion in output at Sunderland from 14,330 to 24,519 tons per annum making her much the largest producer in the country and responsible for more than a quarter of national output. Over the same period shipowning declined at most major ports including London, Liverpool and Hull. The small but burgeoning port of Stockton doubled in size while Newcastle, Scarborough and Yarmouth recorded some growth. Among major ports, however, Sunderland expanded most rapidly with a 58 per cent growth in tonnage from 81,561 to 129,082 and her share of the national total doubled. Thus Sunderland emerges as the only port which ran strongly counter to the national trend in both activities. Newcastle experienced modest growth in both while Stockton's shipowning boomed but its shipbuilding stagnated. Both ports shared some of the local advantages in the north-east with Sunderland, particularly the growth of the coal trade. Shipowning and shipbuilding grew at Yarmouth but this all took place on a small scale and before 1820 as local owners took advantage of the sale of many cheap prices and former naval vessels at the port. In the decade up to 1845 the shipping industry returned to steady growth and Sunderland reverted to a pro-cyclical rhythm.

TABLE 1

COMPARATIVE SHIP OWNERSHIP AT MAJOR ENGLISH PORTS, 1814–46

	1814		1832			1846		
	Vessels	Tonnage	Vessels	Tonnage	Change since 1814 (%)	Vessels	Tonnage	Change since 1832 (%)
Stockton	46	4,416	86	8,998	+104	163	26,877	+199
Sunderland	555	81,561	727	129,082	+58	870	178,584	+38
Scarborough	131	19,238	168	27,734	+44	189	30,832	+11
Newcastle	759	171,119	1,077	220,784	+29	1,477	302,381	+37
Yarmouth	519	39,010	576	43,609	+12	n.a.	n.a.	n.a.
Whitehaven	639	74,111	475	69,013	-7	267	42,002	-39
Whitby	243	46,111	258	41,347	-10	359	53,869	+30
Liverpool	1,251	201,148	853	166,028	-18	1,466	387,536	+133
Hull	787	93,643	557	68,892	-26	468	68,989	0
London	4,523	883,842	2,267	562,839	-36	3,134	637,788	+13
UK TOTAL	21,560	2,414,000	19,664	2,262,000	-6 -9 *	24,771	3,200,000	+42 +42 *

Notes: * Exclusive of Sunderland.

Sources: *Select Committee on Manufactures, Commerce and Shipping* (P.P. 1833, VI), p.718; *Accounts and Papers* (P.P. 1847, LX), p.315; Public Record Office, Customs 36/5; B.R. Mitchell and P. Deane, *Abstract of British Historical Statistics* (Cambridge, 2nd ed. 1971), p.233.

Sunderland's overwhelming success in the face of national adversity is accounted for by several factors. The expansion of the coal trade and the importance of its structure benefited the ports of the north-east as a whole. The competitive advantages in shipbuilding favoured Sunderland alone while port improvements and the nature of the religious background served as supporting features. The experience of Sunderland will also be investigated on a microeconomic level through the papers of

TABLE 2

COMPARATIVE SHIPBUILDING AT MAJOR ENGLISH PORTS, 1814–32

	1814		1824		1832		Tonnage Growth Rate (%)
	Vessels	Tonnage	Vessels	Tonnage	Vessels	Tonnage	
Yarmouth	16	1,349	34	4,666	23	2,739	+103
Sunderland	71	14,330	70	15,184	109	24,519	+71
Liverpool	23	3,896	38	8,449	23	4,553	+17
Newcastle	37	8,481	33	6,142	51	9,012	+6
Stockton	6	657 *	7	1,486	3	618	−6
Whitehaven	29	4,711	20	2,979	15	2,552	−46
Whitby	11	3,813	14	3,206	5	1,315	−66
Hull	49	7,926	36	3,835	35	2,401	−70
Scarborough	10	1,936 *	9	1,535	1	224	−88
UK TOTAL	706	86,100	799	91,100	733	90,200	+5/−9 **

Notes: * 1813.
** Exclusive of Sunderland.

Sources: *Select Committee on Manufactures, Commerce and Shipping* (P.P. 1833, VI), p.718; *Accounts and Papers* (P.P. 1814–15, VII), p.160; B.R. Mitchell and P. Deane, *Abstract of British Historical Statistics* (Cambridge, 2nd ed. 1971), p.233. There are no reliable extant sources for Thames shipbuilding in this period, though it is generally known, through literary sources, to have been declining.

TABLE 3

COAL OUTPUT BY MAIN DISTRICTS, 1811–45
(million tons, quinquennial averages)

	1811-15	1821-25	1831-35	1841-45
North-east	3.7	4.5	6.1	9.7
Yorkshire	1.8	2.4	3.6	4.5
North-west	1.6	2.4	4.5	6.0
East Midlands	1.2	1.5	2.2	2.7
West Midlands	3.1	4.2	4.8	5.7
South Wales	1.8	2.5	4.0	5.0
Scotland	2.5	2.9	4.0	5.3
North-east as % of Total	24	22	21	25

Source. B.R. Mitchell, *Economic Development of the British Coal Industry, 1800–1914* (Cambridge, 1984), p.7.

the Whites who were one of Sunderland's leading business families with extensive interests in shipping, coalmining, iron manufacturing, banking and railways. They also held a central position in Sunderland's political and religious life.

Coal was as critical to the development of the north-east ports as it was to the early industrialisation of Britain and many other countries in the nineteenth century. With the expansion of iron and steel and other coal consuming industries, British coal production grew rapidly from less than 16 million tons at the end of the French Wars to around 50 million by the middle of the century.[8] Durham and Northumberland remained the leading areas of production with a 20 to 25 per cent market share. The north-east's domination of the seaborne coal trade was much greater due to the excellent port facilities in the area. Before the 1850s between 67 and 80 per cent of British coal shipments by sea went through the region's ports. Most early railway building took place in the north-east and complemented the sea coal trade by improving the supply of coal from the mines to the ports. The rapid expansion of the port of Stockton was due almost entirely to the completion of the Stockton to Darlington Railway in 1825. The relative importance of the north-east's seaborne coal trade declined in the second half of the century when railways began to link mines with markets and ports in other areas.

The rapid growth of coal shipments, both coastwise and for export, from the north-east in the three decades after the French Wars stimulated port expansion in the area. The coal trade dominated the shipping industries of Newcastle, Sunderland and Stockton and brought the benefits to local owners of a series of cost-reducing productivity improvements.[9] These included the direct loading of collier vessels through riverside drops and spouts, which were first erected at Sunderland in 1815, 1822 and 1835, thereby circumventing the more costly process of using small keel boats to load the coal onto the collier vessels.[10] An early form of containerisation, unique to the river Wear, took the form of putting the coal into one chaldron (53 hundredweight) containers for loading onboard.[11] Such time and cost savings helped to

TABLE 4

COAL SHIPMENTS BY SEA FROM THE NORTH-EAST, 1816–55
(million tons)

	1816	1830	1840	1855
Coastal	2.8 (80) *	3.5 (73)	4.5 (69)	5.4 (66)
Export	0.2 (67)	0.2 (67)	1.2 (75)	2.3 (52)
TOTAL	3.0	3.7	5.7	7.7

Notes: * Percentage of national total in brackets.
Source: B.R. Mitchell, *Economic Development of the British Coal Industry, 1800–1914* (Cambridge, 1984), pp.16–17.

keep the coal trade profitable in difficult years and encouraged shipping investors.

An important characteristic of the north-east coal trade was the prevalence of a vertically-integrated structure of ownership. Many colliery owners and coal fitters owned the vessels in which they sent their coal to market. Until the late eighteenth or early nineteenth century many businessmen combined the roles of shipowner and resource owner, producer or merchant. Thereafter, the expansion of the scale of commerce, associated with the 'Industrial Revolution', and the accompanying need for greater specialist expertise, led to a division of function in most branches of trade and shipping.[12] It was primarily only in the coal trade that vertical integration persisted well into the nineteenth century. The Sunderland directories, which feature a long section of people who combined the occupations of shipowner and coal fitter, bear witness to this trait.[13] This is not so surprising because the amount of capital required by shipowners in the coal trade was modest, compared with mining investments, while the sturdiness of the commodity and the close proximity of mineral source and market meant little specialist knowledge was required. The coal trade had long been hampered by fluctuating fortunes and the collusive intervention of various interest groups, against both of which vertical integration offered some security. Many vessels deployed in the coal trade could switch to other routes if better market opportunities existed. Ship ownership also ensured regular coal shipments for the mine owner when vessels switched to other trades.

Vertical integration, however, was more than a strategic defensive move; it also facilitated operational economies. Coal fitters were intermediaries between the colliery owners and shipowners who arranged the sale of coal to shipowners and organised its loading for which they charged a fee. Thus a shipowner who was also a coal fitter avoided this cost. More significantly, shipowners who were also fitters or mine owners could jump the queue of vessels waiting their turn to load coal, thereby avoiding a possible delay of a month or more. Therefore, these different branches of an entrepreneur's business acted in symbiosis to enhance the efficiency and competitiveness of his firm. Henry Tanner was a good example of this type of entrepreneur:

> I am a good deal concerned in the coal trade as a coal fitter in Sunderland and I have a facility of loading my own ships which many of my neighbours are not able to do, and the consequence is that I am able to get a turn for my own vessel, and can despatch her a little quicker than other people who are not so situated . . . despatch is the life of the coal trade.[14]

As a result, Tanner's vessels were able to complete as many as 12 coal voyages to London in a year. He was right to emphasise the importance of quick despatch. The rapid expansion of the demand for coal together with the collusive operations of the Limitation of the Vend, which attempted to control output and raise prices, caused long delays for coal in the north-east.[15] In these circumstances the benefits of the mine owner/shipowner could be crucial. In a less favourable long term climate vertical integration might become a burden locking the mine owner into operating unprofitable shipping for the sake of his large mining investments. In the highly competitive conditions of the first half of the nineteenth century, however, it put him at a strong advantage over other shipowners, especially those from other ports who could not keep such a close watch on developments. One London shipowner complained repeatedly to fitters about queue jumping and turned to a local shipping agent to sort out his problems.[16] Some shipowners further up the east coast than London appear to have moved their businesses to the north-east ports in order to compete more effectively in the trade.[17]

Vertical integration principles stretched beyond mining and shipping. Tanner noted, 'there are a great many tradesmen in the port [Sunderland]; many of them have purchased ships by way of assisting their other businesses'.[18] Shipownership was a valuable adjunct to a range of business activities including the importation of timber, cotton, iron and colonial produce. Shipbuilders bought vessels for breaking up or deployed new ones until they were sold. There are several examples of Sunderland entrepreneurs whose business interests included mines, shipping, merchanting, manufacturing and finance. Shipping constituted only a small part of their business and there was little reason to abandon it during a cyclical downturn in that industry. Indeed, cheap shipping could be a boon to such businesses. Thus it becomes clear that the success of the shipping industry at Sunderland was intimately linked with the overall expansion of the port. Few contemporaries doubted the pace of Sunderland's expansion and this has caused one historian to note that 'the rapid growth of Sunderland was one of the marvels of the early Victorian age'.[19]

All three north-east ports shipped most of their coal coastwise, principally to London and the outports along the east coast. This helped to isolate them from one of the perceived causes of the cyclical depression, namely the loss of protection in some overseas trades as a result of the Reciprocity Treaties. Newcastle relied heavily upon the London market, supplying 88 per cent of its needs at the end of the French Wars. In contrast, Sunderland accounted for only eight per cent of the London market supplying instead a greater range of ports along the east coast from Yorkshire to Kent.[20] Stockton emerged as a major centre for the coastal coal trade and within a decade of its foundation was shipping in excess of one million tons a year to other parts of Britain. Teesside exports totalled only 13 per cent of their coastal shipments in the first half of the 1840s. At Newcastle the proportion exported rose steadily from seven to 31 per cent between the end of the French Wars and the mid-1840s, and in Sunderland more steeply from four to 40 per cent. This was helped by the reduction of duties on small coals and the spread

TABLE 5

COAL SHIPMENTS FROM NORTH-EAST PORTS, 1810–49

('000 tons, quinquennial averages)

	Tyne			Wear			Tees *		
	Coastal	Export	Export as % Total	Coastal	Export	Export as % Total	Coastal	Export	Export as % Total
1810–14	1,689	56	3	917	10	1			
1815–19	1,729	119	7	982	40	4			
1820–24	1,870	126	7	1,181	41	4			
1825–29	1,922	159	8	1,391**	46**	3			
1830–34	2,004	204	10	1,064+	156++	15			
1835–39	2,306	457	20	939	249	27	1,148	70#	6
1840–44	2,264	704	31	874	348	40	1,438	187	13
1845–49	2,422	1,004	42	1,734	461	27	1,407	306	22

Notes:
* No earlier data for Tees.
** 1825–28 only.
+ 1833–34 only.
++1830, 1833–34 only.
# 1836–39 only.

Sources: M.W. Flinn, *The History of the British Coal Industry, Vol.2; 1700–1830, The Industrial Revolution* (Oxford, 1984), pp.218, 226; G.R. Porter, *The Progress of the Nation*, Vol.I (1847), pp.338–9; *Accounts and Papers* (P.P. 1837–38, XLV), p.7; (P.P. 1839, XVLI), p.17; (P.P. 1840, XLIV), p.13; (P.P. 1841, XXVI), p.17; (P.P. 1843, LII), p.31; (P.P. 1845, XLVI), p.57; (P.P. 1846, XLIV), p.103; (P.P. 1847, LIX), p.31; (P.P. 1847–48, LVIII), p.309; (P.P. 1849, L), p.345; (P.P. 1850, LII), p.233.

of industrialisation to other European countries which lacked or had not yet developed indigenous mineral resources.[21]

Sunderland vessels carried coal to many parts of the world including France, Northern Europe, North and South America, Africa and India. As a staple and bulky export, coal helped to overcome the imbalance between import and export volumes from which Sunderland, like most British ports, suffered. This permitted two-way trading as vessels left port with coal and returned with timber enabling Sunderland shipowners to charge lower freight rates and undercut competitors from other ports and from overseas. Joshua Wilson, a merchant and shipowner at Sunderland, explained that 'in the port of Sunderland there is a large export of coals, there is a freight both ways, and even from America we can get freights lower than to the west coast of England'.[22] Imports of Baltic timber destined for Sunderland and Newcastle were accorded a freight rate several shillings per load less than for Hull.[23] Liverpool was a major importer of timber, but possessed few bulk exports. Two-way trading and lower freight rates also gave the north-east ports a competitive edge over other ports in shipbuilding.

Table 7 indicates the consistent growth of timber imports into Britain in the two decades after the French Wars. Unfortunately, there is little detailed evidence concerning ports of importation. Individual

TABLE 6

DISTRIBUTION OF COAL EXPORTS FROM NORTH-EAST PORTS, 1826

Destination	% of Total Exports
Denmark	27.4
France	16.8
Germany	11.9
Colonies	10.1
Channel Islands	9.2
Russia	4.5
United States	2.0
Holland	0.9
Others	17.2

Source: M.W. Flinn, *The History of the British Coal Industry, Vol.2: 1700–1830, The Industrial Revolution* (Oxford, 1984), p.228.

TABLE 7

TIMBER IMPORTS INTO THE UNITED KINGDOM, 1814–33

(loads, quinquennial averages)

	From Europe	From North American Colonies	Total
1814-18	125,855	147,598	273,453
1819-23	116,600	335,557	452,157
1824-28	191,890	410,903	602,793
1829-33	122,783	412,683	535,466

Source: *Select Committee on Timber Duties* (P.P. XIX, 1835), p.5.

evidence from select committee witnesses together with the knowledge that Sunderland emerged as the principal centre of wooden shipbuilding suggests strongly that it was a major place of importation. One witness remarked that timber was 'a great part of the shipping trade to the port of Sunderland'[24] while another calculated that between 100 and 140 vessels were involved in the trade at Sunderland.[25] Seven of the 65 ships lost in the trade with British North America in 1838 were from Sunderland compared with only three from Newcastle and none from Stockton.[26] The lower average age and presumed greater safety of Sunderland than Newcastle vessels suggests this understates the relative incidence of Sunderland vessels.[27] The preference of Sunderland owners for relatively new vessels may have enabled them to deploy their vessels more flexibly carrying both dry and wet cargoes and so secure more regular freights on both outward and homeward passages.[28] Sunderland vessels sometimes returned home laden with cotton and from 1837 the port won the right to import East India goods.[29]

In shipbuilding Sunderland clearly led the other north-east ports. Her 71 per cent expansion of output, 1814–32, far exceeded Newcastle or Stockton's growth. Sunderland was building more vessels than any other British port and by the 1830s accounted for a quarter of national output, rising to a third in the following decade. The number of its shipyards grew

TABLE 8

SHIPBUILDING IN THE PORT OF SUNDERLAND, 1810–49

(quinquennial averages)

	Vessels	Tonnage	Number of Shipbuilders	Average Tonnage	Percentage of UK Tonnage
1810–14	52	10,119	n.a.	192	13*
1820–24	54	9,411	16	170	14
1825–29	84	15,862	25	188	16
1830–34	97**	21,513	31	222**	24**
1835–39	153	37,827	44	248	28
1840–44	137	36,038	44	264	26
1845–49	142	41,841	37	295	33

Notes: * England only.
** Excludes 1833.

Sources: Public Record Office, Customs 36/5; *Accounts and Papers* (P.P. 1814–15, VII), p.160; (P.P. 1847, LX), p.385; *Select Committee on East India Built Shipping* (P.P. 1813–14, VIII), p.494; *Select Committee on Manufactures, Commerce and Shipping* (P.P. 1833, VI), p.718; *Select Committee on British Shipping (P.P. 1844, VIII), p.127; Sunderland Herald*, 27 Dec. 1833, p.3; *The Times*, 9 Jan. 1854, p.5; J.F. Clarke, 'Shipbuilding on the River Wear, 1780–1870', in R.W. Sturgess (ed.), *The Great Age of Industry in the North-East* (Durham, 1981), p.113; B.R. Mitchell and P. Deane, *Abstract of British Historical Statistics* (Cambridge, 2nd ed. 1971), pp.220–1.

from only nine in 1801 to 24 by 1814 and 34 by 1833. In the boom of 1840 there were up to 70 shipyards in the port employing 1,600 shipwrights on the construction of 251 vessels[30] so that 'every place where they can build a ship almost is a yard'.[31] Many of these ventures were small scale and speculative, with their decline being as rapid as their ascent.[32] At the same time some of the largest and most successful shipbuilding firms to exist in the port were established during this period, including S.P. Austin & Son (1826), R. Thompson & Sons (1834), R.A. Bartram & Sons (1836) and W. Doxford & Son (1840). Doxfords became one of the largest and most important yards on Wearside, building large cargo vessels and, later, passenger steamers and naval ships. Similarly, Austins grew into a major firm building quality vessels for the general trades on a large site which included a graving dock and a pantoon dock.[33]

Sunderland concentrated upon medium-sized and large wooden sailing ships suitable for many trades. Her share of UK sailing ship output increased from 12 per cent in 1820 to 25 per cent by 1831 and touched 50 per cent in the early 1850s. The average size of Sunderland sailing vessels rose from 126 tons in 1820 to 259 tons by 1834 and 450 by the early 1850s, outpacing the average growth at other UK ports from 106 to 176. The low sides of many Sunderland vessels made them suitable for bar harbours and shallow water ports. Many were highly capacious vessels with a cargo tonnage 50 per cent greater than their registered tonnage.[34] In difficult years the flexibility of a vessel between different trades was an important consideration. Sunderland builders also began to produce East Indiamen, West Indiamen and, towards the middle of the century, high quality clippers for the Australian trade. William Pile, for example, became renowned for the construction of clippers in the middle of the nineteenth century.[35]

Sunderland builders did not move quickly into the new technologies of iron and steam. Few iron and steam vessels were built on the Wear before the 1860s although steam tugs were built and employed there from the 1820s. Steam never represented more than one per cent of tonnage built at Sunderland before the mid-1850s in contrast to a national figure rising up to ten per cent.[36] Newcastle, together with Liverpool and Clydeside, moved into iron building earlier, though this may have been a premature move in advance of the trade revival of the 1850s. There seems to have been a pattern in the middle and later nineteenth century of shipowners buying steam in cyclical upturns because of its greater productivity but turning to sail in downturns because of its lower capital and running costs.[37] This may help to explain the success of Sunderland shipbuilders relative to other ports before the 1850s.

Sunderland vessels found a good market both locally and at many other ports around the country. In most years about a half of new vessels were sold to shipowners within the port.[38] Most shipowners looked initially towards local builders with whom they could establish a close understanding and supervise construction details. The shipowner could arrange the fitting out of the vessel, hire a master and crew and send it directly on a commercial voyage once it was completed. With the coal and timber trades booming there was a buoyant local demand for Sunderland vessels. The preference of local owners for young fleets also served to keep demand high. Shipowners came from neighbouring ports, such as Newcastle, Stockton and Hartlepool, also benefitting from the trade boom, to buy Sunderland vessels. Owners also came from as far afield as Scotland, Ireland, Wales, London and Liverpool attracted by the wide range of capacious colliers, flexible medium sized traders and specialist vessels for the East and West India trades.

Sunderland vessels were not without their critics, who alleged that they were the product of poor workmanship and ephemeral materials. Robert Gray, a merchant and shipowner, noted:

> I have rather a prejudice against north country built ships, but I should say that a vessel built in the west of England is as good at ten years old as a vessel built at Sunderland is at six.[39]

Mitchell, however, believed that, 'Sunderland shipbuilders have long been famous for the strength and lasting qualities of their vessels.'[40] It seems likely that the quality of Sunderland shipbuilding was improving around the middle of the century.[41] *The Times* had little doubt about the quality of Wearside shipbuilding in 1851:

> We have heard of sailing feats of Sunderland craft that are equal to anything that has been achieved by the cracks of London or Isle of

> Wight yards . . . with continued attention to the qualities of their stuff and the perfection of their models, Sunderland will hold her own with any shipbuilding port of the world.[42]

The poor reputation of Sunderland vessels in the early years of the nineteenth century had much to do with the prejudicial attitude of Lloyd's towards northern shipbuilding. Lloyd's assessment of the insurance risk of vessels was based on the oversimplistic combination of age and place of build, the latter point discriminating against northern ports. This led to a conflict at the end of the eighteenth century between the underwriters and the shipowners with each group publishing their own book of ship assessments. The underwriters (green book) criticised shipbuilding at the outports, particularly in the north, while the shipowners (red book) failed to employ any surveyors. When the dispute was eventually resolved in 1833, the new system gave a more fair assessment of shipbuilding at the northern ports. Subsequent Sunderland vessels were awarded higher ratings. In 1834, for example, ratings of between '4A' and '11A' were accorded to all 84 vessels assessed which meant they could remain in the highest classification of quality (A) for between four and eleven years. The maximum attainable was '12A'.[43]

Price was even more important than quality in attracting buyers from other ports particularly in the difficult postwar decades. Ships for the general trades could be bought for less than £9 per ton at Sunderland and East Indiamen for £11 to £13 in the 1820s and 1830s. In contrast, Thames builders asked £14 to £15 for a general vessel and £25 for West Indiamen. Plymouth vessels cost around £17 and those from the Isle of Wight, £15 to £19. Whitby vessels, highly regarded for their quality, were unable to compete at £18. At neighbouring South Shields vessels cost at least £13 per ton which led many local owners to have their vessels built on the Wear and brought around to the Tyne for outfitting.[44] Sunderland vessels were cheaper because of the low cost structure of the local shipbuilding industry. Timber and other shipbuilding materials, labour and land were all cheaper than at most other ports.

Contemporaries praised the skill, productivity and work flexibility of Sunderland carpenters and shipwrights. William Nicholson, a Sunderland shipowner, believed local shipbuilders 'have acquired an expertness in shipbuilding which surpasses anything I have seen.[45] Others pointed out that carpenters were younger and more skilled at Sunderland than at Newcastle and instead of acting in a 'combination' to resist wage changes they served as independent builders in agreement with timber merchants.[46] In the difficult postwar years new shipbuilding firms emerged at Sunderland out of groups of unemployed carpenters and shipwrights who clubbed their savings together and were able to operate cheaply with low overheads. The system of payment for new vessels at the port presented few cash flow problems. A quarter of the payment for the vessel was made before construction was begun, another quarter when it was half built and identical amounts when it was three-quarters completed and on final delivery.[47] If the vessel did not find an immediate sale the builders might benefit from an extension of credit by the supplying timber merchant. Where shipwrights were employed by the larger Sunderland builders they were paid piece rates which proved cheaper than the day payments common at Newcastle.[48] Rigid contracts kept wages high in the London shipbuilding industry at a time of general price deflation. In the 1840s, for example, Sunderland shipwrights were paid only half the wages of those at London and also less than at major ports such as Liverpool and Newcastle.[49]

The importation of timber into Sunderland at low freight rates made for its cheap and plentiful supply to shipbuilders. 'They [shipbuilders] can purchase timber cheaper at Sunderland than at any of the neighbouring ports', noted one observer.[50] Falling freight rates fuelled a flood of timber into Sunderland which, like an ever rising spiral, increased the supply of shipping and further depressed freight rates. The variety of types of wood imported into Sunderland from different parts of the world enabled builders to use the most suitable timber in different parts of a vessel's construction. The internal structure was normally of oak, beech or elm with pine for the decks and African teak, mahogany and green heart for the cabin and other fittings. Sunderland builders prided themselves in their economical use of timber, ensuring little was left to waste. Frequently, when a large, high quality vessel was under construction, a smaller, inferior ship would be built adjacent to it on the same landing, probably as a collier, using surplus timber from the former. In some ports, such as London, this excess timber often went to waste.[51]

Sunderland shipbuilders benefited from a cheap and plentiful supply of riverside land on which to develop and expand. Places such as Southwick, which had previously been a greenfield site, were soon dominated by shipbuilding yards. Even the town's lime kilns were removed and replaced by shipyards. Rents and land prices were low compared with many other ports such as Liverpool where other riverside industries were competing for space. The remarks of one contemporary historian on the spatial growth of Wearside shipbuilding are noted at the beginning of this article.

Sunderland also benefited from persistent attempts to improve navigation on the Wear and to expand the harbour facilities. A series of harbour and port improvements in the first half of the nineteenth century served as a springboard for expansion. An Act of 1831 'for the improvement and preservation of the river Wear and port and haven of Sunderland' provided for the appointment of commissioners to organise infrastructure improvements financed by tonnage dues levied on vessels trading at the port.[52] In 1832 the South Pier was rebuilt and extended; a decade later the North Pier was completed. A North Dock was built in 1837 and a more extensive South Dock in 1850. The opening of the Durham & Sunderland Railway in 1836 improved the supply of coal to the port from the collieries to the south of the Wear such as Haswell, Murton, Shincliffe, Belmont and Whitwell and helped to offset the loss of Lord Londonderry's coals after he developed the port of Seaham as an alternative point of shipment.[53] Other stimuli to the port included the construction of the Wear bridge and the coming of the Lambton and Hetton railways.[54]

River and harbour improvements on the Wear were not matched by similar developments on the Tyne or Tees until the middle of the century. The Tyne was in no better condition in 1850 than it had been in 1800 and had become 'a treacherous and inconvenient port'.[55] Obstacles hindered the entrance to the river and there was little clearance over the bar at low tides. Consequently, many shipowners and masters found Sunderland preferable to the Tyne ports. While cooperation and consensus promoted port and river improvements on Wearside, Tyneside was dogged by disputes among the different riverside settlements. Gateshead and Shields, encouraged by parliamentary representation from 1832 and municipal incorporation a few years later, tried to wrest control of the river from Newcastle's neglectful hands. At length this led to legislation in 1850 which passed control of the Tyne into the hands of the Tyne Improvement Commission. The Commission consisted of representatives of the major towns on the river, the shipping interest and the Admiralty. It is of little surprise that a major sequence of port improvements ensued after 1850. On Teesside, Middlesborough Dock was opened in 1842 and that of West Hartlepool in 1847.[56]

Many of the reasons for Sunderland's counter-cyclical prosperity can be illustrated and illuminated by reference to the experience of one of the town's principal firms. The Whites were one of Sunderland's leading shipowners in the decades after the French Wars. John White began his working life as a cooper in Monkwearmouth in the late eighteenth century. He appears to have benefited from the boom conditions of the French Wars; by 1814 he owned a fleet of 1,300 tons worth £23,000 and was also involved in coal fitting, glass and iron manufacture. His sons Andrew and Richard followed his business interests, buying vessels cheaply in the postwar depression so that by 1834 the family owned 3,700 tons of shipping worth around £37,000. John died in 1832 but his sons consolidated their existing business interests and moved into new areas including mine owning, railways, docks, banking, shipbroking and the ownership of steam tugs.[57]

The symbiotic benefits of vertical integration are evident from the coordinated manner in which the Whites combined their different business interests. Their vessels regularised the shipment of coal from their mines and returned to Sunderland with timber at low freight rates. Their steam tugs could tow their ships in and out of the Wear when wind or tide were unfavourable. Occasionally, the Whites carried timber on their own account and built a vessel themselves with the assistance of hired shipwrights and carpenters. Evidence of the diversity of deployment of Sunderland shipping is indicated by the White vessels which in 1836 voyaged as far afield as Quebec, St. John's (New Brunswick), Sierra Leone, Rio de Janeiro and Bombay.[58] Their vessels were sometimes used to import raw materials or export finished products related to their manufacturing interests. The Whites also shipped goods to and from other ports. In 1836 their vessel *Mary White* shipped salt from Liverpool to Sierra Leone and returned home with timber. In the following year their vessels *Duke of Cleveland* and *Lady Williamson* shipped coal from Middlesborough.[59] This may help to explain the slight reduction in coal shipments from Sunderland in the later 1830s at a time when the port was nonetheless prospering.

Shipownership also enabled the Whites to keep on close terms with local shipbuilders from whom they bought most of their vessels. By regular patronage of such builders as John and William Gales, Partis Oswald, John Brunton and Samson Mills, the Whites secured favourable price, credit and delivery terms on new vessels. Whites sold several older vessels back to Sunderland shipbuilders as a form of part exchange. The shipbuilder could use the remaining good timbers and stores on new vessels. Most of their vessels were of a handy medium size, between 150 and 300 tons, making them suitable for many trades. Many were brigs or snows which, being two-masted, kept down manning costs and facilitated access to the cargo hatches. The Whites also bear witness to the young vessels preferred by Sunderland owners, maintaining a fleet with an average age of only five or six years. Between 1818 and 1832, the years for which figures survive, John White's fleet made profits in all but one year, 1822, suggesting that the firm's shipping operations were highly successful. In 11 of these 15 years his fleet returned more than the five per cent of fixed capital which might have been expected through passive investments in government stocks. In 1823, White made profits of 25 per cent (£3,163) in a temporary boom but refused to take advantage of a shortlived rise in ship values to sell off his fleet.[60]

There were other beneficial links between the different branches of their business. Coal was used as a raw material in their iron foundry while iron products included rails in the construction of lines in which they held an interest. In November 1836 Whites' steam foundry contracted with the Durham & Sunderland Railway to supply two 85-horsepower engines at a cost of £5,345. Significantly, Whites owned 5 per cent of the railway company's capital and Andrew was a director.[61] In turn the railway facilitated the transport of coal from their mines at Whitwell and Shincliffe to points of shipment on the Wear. Their banking interests helped to finance such industrial expansion. The Whites were actively involved in a series of local banks, including the Sunderland Joint Stock Bank, the Newcastle Joint Stock Banking Co. and the Northumberland and Durham District Banking Co., all of which lent extensively to local maritime and industrial enterprises.[62]

With a finger in so many local pies, the Whites were able to extract favourable business contracts from smaller tradesmen anxious for their patronage in difficult times. Evidence from their account books indicates a practice of sometimes using coal as a form of currency with which to settle bills, including the part payment of vessels.[63] This option offered them greater liquidity and financial flexibility. They also used their influence and power to conduct shipbroking activities. Realising the national demand for Sunderland vessels and exploiting their geographical and market position, they acted as middlemen in the sale of some virtually new vessels to shipowners from other ports. They could sell cheap Sunderland vessels in London at the higher prices which the London market would bear and thereby derive a comfortable profit. In 1821 John White sold the *Duchess of Gloucester* of 205 tons to Robert Douglas, a London merchant, for £2,500. She had been built the previous year at Sunderland. At £12 per ton this was almost certainly a mark up on its Sunderland sale value particularly in the depth of the depression of the early 1820s.[64] In 1822 the firm sold another almost new Sunderland vessel, *Kingston*, in London for £13 per ton.[65]

Shipping was just one part of the Whites' business empire and its share of their total investments was probably diminishing by the 1830s as new interests developed. It remained, nonetheless, an essential link within their integrated operations and therefore the cross-subsidisation of shipping losses might have been expected. As we know, their vessels were profitable throughout the depression of the 1820s and 1830s which suggests that vertical integration probably brought operational and commercial economies to shipping. This has already been indicated by reference to quicker turnaround times in the coal trade, a regular demand for shipping, and cheaper loading charges. Doubtless, there were similar entrepreneurs to be found on Tyneside but the boom in shipbuilding, the more diversified deployment of shipping and the more rapid growth of the Sunderland economy in general provided greater opportunities on Wearside.

The Whites were indicative of another common feature among Sunderland entrepreneurs namely their allegiance to religious nonconformity. Sunderland was one of the leading centres of religious nonconformity in the country. In the religious census of 1851 it was discovered that 68 per cent of worshippers in Sunderland attended a chapel. This made Sunderland the fourth strongest centre of nonconformity in the country after Rochdale, Dudley and Bradford. Only 44 per cent were nonconformist in Newcastle.[66] The urbanisation and in-migration which accompanied the rapid economic expansion of Sunderland made it a fertile breeding ground for nonconformity.[67] The corruption of the established church in the north-east and its inability to keep pace with population movements created a receptive audience for itinerant preachers. Many of the migrants to Sunderland were Scottish and therefore had no affinity to the Church of England. Methodism was the strongest religious sect in Sunderland although Quakerism, Presbyterianism and Congregationalism all had a strong following.

Frequent historiographical attention has demonstrated the manner in which nonconformists, excluded from many areas of public life and fuelled by a strong work ethos, were highly successful in business.[68] For the Sunderland nonconformists it was neither political exclusion nor dedicated thrift which secured economic success. By the 1830s they were heavily involved in Sunderland politics at both local and national levels. Rather it was the close knit links of patronage and interdependence within these religious groups which served the economic interests of the Sunderland business community. One local historian has confidently asserted the existence of a ruling élite in Sunderland bound together by religion, commerce and kinship:

> The Whites, Dixons, Kirks, Vints, Dawsons, Browns, Muschamps, Tuers, Watsons, Youngs and others formed an influential clan drawn together through membership of the central Sunderland Wesleyan Society . . . and their relationship was cemented by a complex, interlocking system of marital and commercial alliances.[69]

Seven of John White's eight children married, each into another family in the group.

In contrast to the divisions which damaged Methodism in many towns, the Sunderland sect remained, for the most part, a cohesive group. Doctrinal tolerance, which stretched to interdenominationalism, together with a shared belief in economic progress kept them unified. They supported each other in business with advice and financial assistance and as a result did much to boost the local economy in troubled times. Acting together they took control of many enterprises including the Durham & Sunderland Railway and the Sunderland District Joint Stock Bank. Business patronage also operated through their domination of local political and administrative institutions. Methodists were prominent on the borough council and promoted policies designed to benefit the town's trade and industry, including the port improvements previously mentioned.[70] Sunderland Methodists, probably motivated by ideas of social control, were also heavily involved in charitable work and propagating religion within a paternalist framework at the workplace. The Whites, for example, built a school, gave generously to most charities for the poor and held regular chapel services for their employees. The success of these policies, forged by a consensus among the nonconformist élite, did much to engender social stability which was reflected in good industrial relations in the town.

A full investigation of the relationship between religion and economic development goes beyond the scope of this paper but it does suggest a refinement of the purely economic explanation of Sunderland's success hitherto presented.[71] Traditional explanations of individual thrift or exclusion must be rejected, however, in favour of understanding the influence of religion upon group behaviour. In Sunderland, it cemented a large group of entrepreneurs into a vocal and powerful pressure group. Recent studies of the Quakers, particularly Joseph Sturge in Birmingham and the Pease dynasty on Teeside, suggest the importance of this form of group mentality. Both relied upon group support from the Quakers to develop and sustain their business activities.[72] John Mackintosh, the 'toffee king', benefited from his membership of the New Methodist Connection which brought a 'network of friends and associates whose support and skills . . . would extend his own resources when harnessed together in business'.[73]

The experience of Sunderland during the prolonged depression after the French Wars is both unique and remarkable. At a time when most other major ports were suffering stagnation or decline in shipowning and a virtual collapse in shipbuilding, Sunderland was demonstrating expansive qualities. Shipowning at the port was stimulated by the growth of coal exports and timber imports. Shipbuilding at the port boomed, helped by the availability of cheap timber, low wages and a plentiful supply of land. Port improvements and a religious background conducive to entrepreneurial success were significant supporting factors. Shipowning increased at Newcastle and Stockton, the other major ports in the north-east, as they shared in the growth of coal shipments though neither port came close to competing with the timber trade, harbour improvements, shipbuilding or general economic expansion experienced by Sunderland. The central position of shipping in the Sunderland economy and the existence of vertically-integrated businesses meant that prosperity was rapidly transmitted to many other sectors of trade and industry.

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NOTES

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1. *Select Committee on Manufactures, Commerce and Shipping* (P.P. 1833, VI), p.399, evidence of Henry Tanner, Sunderland shipowner and coal fitter.
2. A.D. Gayer, W.W. Rostow and A.J. Schwartz, *The Growth and Fluctuation of the British Economy, 1790–1850* (Oxford, 1953), p.709.
3. S. Ville, *English Shipowning during the Industrial Revolution* (Manchester, 1987), Ch.6 for the wartime profits of the firm.
4. *S.C. Manufactures, Commerce and Shipping*, pp.226–7, evidence of Robert Gray, merchant and shipowner.
5. Ibid., p.339.
6. B.R. Mitchell and P. Deane, *Abstract of British Historical Statistics*, (Cambridge, 2nd ed., 1971), pp.271, 220.
7. Gayer, Rostow and Schwartz, *Growth and Fluctuation*, p.801.
8. See R. Church, *The History of the British Coal Industry, Vol.3: 1830–1913, Victorian Pre-Eminence* (Oxford, 1986), p.19 for the distribution of coal consumption by use.
9. S. Ville, 'Total Factor Productivity in the English Shipping Industry: The North-east Coal Trade, 1700–1850', *Economic History Review*, 2nd ser., Vol.XXXIX No.3, 1986, pp.355–70.
10. H.L. Walker, 'Ships, Sunderland and Lloyd's Register of Shipping', *Bulletin of Durham County Local History Society*, Vol.12 (1970), p. 21. T. Potts, *History of Sunderland* (Sunderland, 1892), p.101 draws attention to the clearance of old housing on the Low Quay in the 1830s to make way for new drops.
11. See J.M. Fewster, 'The Keelmen of Tyneside in the Eighteenth Century', *Durham University Journal*, Vol. 19 (1957–58), pp.24–33, 66–75, 111–23; and D.J. Rowe, 'The Decline of the Tyneside Keelmen in the Nineteenth Century', *Northern History*, Vol.4 (1969), pp.58–75.

12. Ville, *English Shipowning*, ch.1.
13. For example, *White's Directory of Northumberland and Durham* (Sunderland, 1827–8).
14. *S.C. Manufactures, Commerce, and Shipping*, p.398.
15. The impact of the Limitation of the Vend was discussed in detail by P.M. Sweezy, *Monopoly and Competition in the English Coal Trade, 1550–1850* (Cambridge, MA, 1938). For a more recent and pessimistic assessment of the impact of the Vend see W. Hausman, 'Market Power in the London Coal Trade: the Limitation of the Vend, 1770–1845', *Explorations in Economic History*, Vol.21 (1984), pp.383–405.
16. S. Ville, 'James Kirton, Shipping Agent', *Mariner's Mirror*, Vol.67 (1981), pp.149–62.
17. J. Stevenson, *Observations on the Coal Trade in the Port of Newcastle upon Tyne* (Newcastle, 1789), p.42 identified this trend in the later eighteenth century when the Vend had only been in operation a decade or so.
18. *S.C. Manufactures, Commerce and Shipping*, p.483.
19. M. Sellers in the *Victoria History of the Counties of England: Durham* (1907), p.278.
20. M.W. Flinn, *The History of the British Coal Industry, Vol.2: 1700–1830, The Industrial Revolution* (Oxford, 1984), p.220.
21. N.J.G. Pounds, *An Historical Geography of Europe, 1830–1914* (Cambridge, 1985), pp.39–40 demonstrates Britain's domination of European coal resources and the low level of production on the Continent until the middle of the nineteenth century.
22. *Select Committee on the Navigation Laws* (PP. 1847–48, XX P+2), p.317.
23. *S.C. Manufactures, Commerce and Shipping*, p.130, evidence of Robert Anderson, shipowner of South Shields. W.S. Jevons, *The Coal Question* (1865), p.243 came to a similar conclusion.
24. *Select Committee on Timber Duties* (P.P. 1835, XIX), p.297, evidence of John Spence, shipowner, shipbroker and general merchant at Sunderland and Stockton.
25. *Select Committee on Shipwrecks of Timber Ships* (P.P. 1839, IX), p.65, evidence of A.S. Ord, shipowner and merchant of Sunderland.
26. Ibid., pp.8–10, evidence of C. Graham, secretary to Lloyd's Registry of Shipping.
27. S. Ville, 'Shipping in the Port of Newcastle, 1780–1800', *Journal of Transport History* 3rd ser., Vol.9 No.1 (1988), pp.70–1, demonstrates the great age of Newcastle vessels at the end of the eighteenth century.
28. *S.C. Shipwrecks*, p.65, evidence of Ord.
29. W. Whellan, *History of Durham* (1856), p.661.
30. W.C. Mitchell, *History of Sunderland* (Sunderland, 1919), p.129; N. McCord, *North-East England* (1979), p.49.
31. *S.C Manufactures, Commerce and Shipping*, p.401.
32. D. Dougan, *The History of North-East Shipbuilding* (1968), p.31.
33. Mitchell, *Sunderland*, pp.132–9; Dougan, *North-East Shipbuilding*, p.53 describes the ascent of another Sunderland shipbuilder, William Pile.
34. Potts, *Sunderland*, p.150.
35. Dougan, *Shipbuilding*, pp.24, 53.
36. J.F. Clarke, 'Shipbuilding on the River Wear, 1780–1870', in R.W. Sturgess (ed.), *The Great Age of Industry in the North-East* (Durham, 1981), p.110; Mitchell, *Statistics*, pp.220–1.
37. S. Palmer, 'The British Shipping Industry, 1850–1914', in L.R. Fisher and G.E. Panting (eds.), *Change and Adaptation in Maritime History: The North Atlantic Fleets in the Nineteenth Century* (Newfoundland, 1985), p.93.
38. *Select Committee on British Shipping* (P.P. 1844, VIII), p.114, evidence of Henry Tanner.
39. *S.C. Manufactures, Commerce and Shipping*, pp.226–7, evidence of Robert Gray.
40. Mitchell, *Sunderland*, p.129.
41. S. Pollard, 'The Decline of Shipbuilding on the Thames', *Economic History Review* 2nd ser., Vol.III No.1 (1950–51), pp.72–89.
42. *The Times*, 4 Feb. 1851, p.5.
43. T. Nell, 'Shipbuilding in Sunderland in 1834', *Antiquities of Sunderland*, Vol.25 (1970–73), pp.71–2.

44. *S.C. British Shipping*, pp.114, 179, evidence of Henry Tanner and William Cuming, Plymouth shipowner; *S.C. Manufactures, Commerce and Shipping*, pp.340, 347, 357, 399, 410, 476, evidence of John Nickols, shipowner and shipbroker, William Woolcombe, Robert Barry, Whitby shipbuilder, Henry Tanner and Thomas Young, shipowner and shipbuilder.
45. *S.C. British Shipping*, p.127.
46. *S.C. Manufactures, Commerce and Shipping*, pp.504, 518, evidence of Thomas Hedley, Newcastle shipowner and shipbroker.
47. Ibid., p.407, evidence of Henry Tanner.
48. Ibid., p.476, evidence of Thomas Young.
49. Pollard, 'Thames Shipbuilding', pp.73–6, 80.
50. *S.C. Manufactures, Commerce and Shipping*, p.417, evidence of John Spence.
51. *S.C. Navigation Laws*, pp.317–8, evidence of Joshua Wilson.
52. 11 Geo. 4, c. 49.
53. Potts, *History*, pp.193, 320.
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55. McCord, *North-East England*, p.51.
56. Ibid., pp.50–1 and A.G. Kenwood, 'Capital Investment in Docks, Harbours and River Improvements in North-eastern England, 1825–50', *Journal of Transport History*, new series, Vol.1 (1971–72), pp.69–84.
57. Information relating to White's business is taken mainly from some surviving accounts and notebooks deposited in Tyne and Wear Record Office (TWRO), 730/1–4.
58. TWRO, 730/4.
59. Ibid.
60. Ibid.
61. Ibid.
62. M. Philips, *A History of Banks, Bankers and Banking in Northumberland, Durham and North Yorkshire* (1894), pp.320, 336–41, 383–4.
63. TWRO, 730/1.
64. Ibid.
65. Ibid. Some vessels may have been sold directly to other ports by Sunderland shipbuilders but most of the latter were small scale, recently formed and lacking the extensive contacts of a large and established business such as White's.
66. R. Inglis, 'Patterns of Religious Worship in 1851', *Journal of Ecclesiastical History*, Vol.II, (1960), pp.182–3.
67. D. Hempton, *Methodism and Politics in British Society, 1750–1850* (1984), pp.14–15.
68. A recent study takes a somewhat different approach by emphasising how organisational skills acquired in religious movements might subsequently benefit a businessman. Conversely, it also addresses the value of business skills in running religious institutions. D.J. Jeremy (ed.), *Business and Religion in Britain* (Aldershot, 1988). In particular see the introduction by Jeremy.
69. G. Milburn (ed.), *The Diary of John Young* (Leamington Spa, 1983), p.xiv.
70. For example, in February 1843 Sunderland Council sponsored a petition for the reform of income tax because it 'is unjust and unequal in as much as it presses with the same severity on the daily and uncertain gains of the industrious as on the fixed fortune of the proprietor of land'. TWRO, SDB/AA/1/1 Sunderland Borough Council minutes, 1835–47.
71. T. Nossiter, *Influence, Opinion and Political Idioms in Reformed England: Some Case Studies from the North-East, 1832–74* (Brighton, 1975), Ch.8 illustrates the influence of the Quakers in Darlington.
72. A. Tyrrell, *Joseph Sturge and the Moral Radical Party in Early Victorian Britain* (1987); M.W. Kirby, *Men of Business and Politics: The Rise and Fall of the Quaker Pease Dynasty of North-East England, 1700–1943* (1984).
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CREDIT FACILITIES AND THE GROWTH OF CONSUMER DEMAND FOR ELECTRIC APPLIANCES IN THE 1930s

By SUE BOWDEN

Recent analyses of Britain's economic performance in the twentieth century have identified two characteristics which, it is clamed, 'explain' her inability to respond to changing economic conditions and, in particular, to effect a full transition to modern corporate capitalism. The two characteristics are institutional rigidity, which is seen as characterising industrial, state-enterprise and finance-industry relations, and 'short termism', which labels industrial policy as rational in the short term but lethal in the long term. Adherents of this school agree that, for example, 'failure' to introduce modern, high throughput, standardised production processes was profit maximising in the short term given the absence of a mass home market. Domestic demand conditions were such that transformation of the industrial process was not viable in the short term.[1]

The notion that the marketing mechanism may help overcome identified demand constraints has been ignored in the literature to a large extent. Obvious questions are whether industry diagnosed the demand constraints correctly and, if so, what it did to overcome them. An ideal case for such treatment is the electricity industry between the wars. During the 1930s Britain witnessed a shift in consumption patterns. It is generally agreed that one of the essential features of this shift was the diffusion of 'new' products through society and that, among these 'new' products, domestic electric appliances figured prominently.[2] Recent research has shown that the development of a mass market for these goods was constrained by price and income inelasticities.[3] We have two observations: that there was a marked shift towards the consumption of new consumer durables, but that demand was dampened by price and income inelasticities. How, then, did the electricity industry stimulate demand in these conditions? Were its policies based on a correct diagnosis of the demand constraints and, if so, how effective were they?

The strategy which was all important was the introduction of credit facilities by the electricity supply industry in the interwar years. Possible parallels between the interwar years and the present obviously spring to mind. Contemporary concern as to the level and extent of 'plastic card purchasing' has, if nothing else, drawn our attention to the importance of credit in stimulating and maintaining the demand for consumer goods. Given the continued fashion for drawing parallels between the present time and the interwar period it is surprising that to date the possibility that credit may have helped to stimulate demand in the interwar years has not been fully explored. Yet the evidence presented in this paper indicates that we ignore credit at our peril if we are fully to understand the demand for consumer goods in this period. At a microeconomic level, Richardson's analysis of the period stressed the high propensity to consume and the buoyancy of consumption even in the depression for home market-created 'new' industries.[4] Given the freeing of restrictions in 1931, it is not inconceivable that savings ratios would have changed and that changes in consumer credit arrangements could help explain the high propensity to consume.

This article assesses the role played by the electricity undertakings in promoting the growth of demand for electrical appliances in the home. The focus is on the credit facilities the undertakings offered, and the extent to which such facilities stimulated demand for electric consumer durables. As the British electricity industry saw it at the time, the overriding consideration in the domestic market was to boost the consumption of electricity in the home. Revenue from electric lighting was considered to be insufficient; new consumers had to be added and existing consumers had to be persuaded to use more electricity. Here, however, the electricity undertakings believed they were faced with a twofold problem. Heavy power consuming appliances (such as cookers, water and space heaters) were, relatively speaking, expensive. Purchase price constraints would, it was thought, constrain future market development. The second problem was less tangible. The industry believed it was faced with a strong barrier of consumer inertia which was seen to reflect a reluctance on the consumer's part to switch from gas to electricity and a resistance to any 'new' gadget. The resistance was viewed as partly based on ignorance (the consumer would have to be educated to use electricity) and partly an aversion to new technology.[5] Purchase price and inertia constituted, in the electricity industry's eyes, serious constraints upon the growth of demand for electric appliances and, by definition, impediments to the growth of domestic power consumption. The solution, as the undertakings saw it, was the introduction of deferred payment schemes. The promotion of easy payment schemes would overcome the price constraints by giving the potential consumer the opportunity to spread the purchase cost over time. Hire facilities would likewise introduce consumers who refused to commit themselves to outright purchase to the benefits of cooking and/or heating by electricity.

This article is a study of the validity of the schemes introduced by the electricity industry. It does not claim that credit by itself 'explains' the growth of the domestic electricity industry, or that the growth of the domestic electricity industry 'explains' any recovery in the period (the industry was too small to do that). Nor does it invalidate recent macroeconomic analyses of the consumption function in the period.[6] In section II, the development of deferred payment schemes for domestic electrical appliances in the interwar years is outlined. Estimates are given of their importance in terms of the percentage of goods which were sold on hire purchase terms, the revenue obtained from the operation of the schemes, and the revenue obtained from any resultant increase in the domestic use of electricity (this last point being the benchmark by which the electricity industry viewed the schemes). Section III assesses qualitative evidence on the extent to which the schemes helped overcome cost and inertia constraints, problems which the electricity industry viewed as impeding market development. Section IV addresses the theoretical background to the cost and learning curve implications of credit, and builds on this literature to develop an explanatory model which puts the industry's promotion plans to statistical tests. The results provide evidence on the importance of deferred payment in stimulating the growth of demand for electric consumer durables.

II

The Importance of Deferred Payment: General Assessment

Credit schemes for electric consumer durables may be broken down into three categories, reflecting both the sources of credit and the types of goods offered. The first category embraces schemes run by the electricity undertakings which, on the whole, covered those goods which had to be connected to the electricity supply, such as cookers, wash boilers and water heaters. The electricity undertakings were interested in promoting the widespread use of these appliances not for the profit on rentals or credit, but for the increased domestic consumption of electricity which would result. Deferred payment for the electricity undertakings was a means to a specific end, rather than an end in itself. Hire purchase schemes run direct by manufacturing companies for the 'sale' of vacuum cleaners constitute a second category. Three quarters of all vacuum cleaner sales in 1938 were on hire purchase terms.[7] The final category embraces schemes run on behalf of manufacturers by finance houses. Finance house records indicate that domestic electric appliances did not constitute a major part of their credit sales in the period, with the singular and notable exception of the radio.[8] Jefferys estimated that three quarters of radio sales in 1938 were on hire purchase terms.[9] Musical instruments such as pianos were the other important household durable sold on credit by the finance houses in the 1930s.

Three forms of deferred payment schemes were offered by the electricity undertakings: assisted wiring, hire, and hire purchase. Strictly speaking, hire should not be included in an analysis of credit since it does not constitute a commitment to purchase. Hire is a form of rent. Nevertheless, insofar as hire constituted a mechanism by which consumers could use and thus familiarise themselves with the product, it was included in the analysis. Assisted wiring and hire purchase of appliances were treated separately; although both embraced the same method of payment (payment being extended over a given period of time for the purchase of a commodity) they catered for distinct commodities. Assisted wiring facilities offered hire purchase terms for wiring a house for electricity; hire purchase for appliances offered, self evidently, credit for the purchase of given electric consumer durables. Research on this topic is of necessity limited to the period after the late 1920s because, prior to 1926, legal restrictions prevented undertakings from offering such facilities. The uptake of deferred payment provisions dates from 1929 – a lagged reaction to the entreaties of the Electricity Commissioners to the undertakings to offer these facilities. This analysis of the role of credit is, therefore, limited in effect to the 1930s. Before that decade credit did not, to all intents and purposes, apply.

All electricity undertakings had the power to offer all three facilities in the 1930s. Private undertakings generally had always had this right, but, prior to the Electricity (Supply) Act of 1926, the power to sell whether outright or on hire/hire purchase terms was only enjoyed by certain local authority undertakings which had obtained specific powers via local Acts. Section 48 of the 1926 Act enabled electricity authorities to 'sell . . . appliances for lighting, heating and motive powers, and for all other purposes for which electricity can or may be used . . . and may install, connect, repair, maintain and remove the same'.[10]

The introduction and extension of deferred payment schemes was based upon the premise that such facilities would encourage appliance use, which would in turn boost domestic consumption of electricity. The undertakings do not appear to have leapt at the chance to offer deferred payment schemes. The evidence suggests that initially they had to be cajoled, persuaded and constantly reminded by the Electricity Commissioners of the desirability of such schemes. From early on in the period, the Electricity Commissioners tried to promote the extension of deferred payment schemes, encouraging the undertakings to understand that such facilities constituted 'a means to the main end. The resultant economic importance to the supply undertaking itself of increased output and improved load factor brought about by the use of such apparatus should be borne in mind'.[11] The Commissioners were powerful agents in promoting advice on the virtues and the benefits of the schemes; they did not however have any statutory powers to force the undertakings to follow their advice. There appears to have been a marked lagged reaction to the freeing of the legal restrictions in 1926. The upturn in the general availability of the schemes dates not from 1927 or 1928 – but from the early 1930s. In 1929, only 25.1 per cent of local authority undertakings offered such schemes; by 1934 84 per cent did so. The percentages for private companies were 7.7 per cent and 78 per cent respectively. The extension of hire and hire purchase facilities was less marked. 46.8 per cent of the 650 undertakings offered hire or hire purchase schemes in 1928–29. By 1934 68.5 per cent offered hire schemes (72 per cent local authority and 65 per cent private enterprise) and 77 per cent offered hire purchase schemes (73 per cent and 81 per cent respectively).[12] In the financial year ending March 1938, 78.11 per cent of quoted undertakings offered hire facilities, whilst 93.37 per cent offered assisted wiring facilities.[13] Explanations for this lagged reaction cannot be found merely in the undertakings' reservations as to the viability of the schemes (see below). Explanations appear to be rooted in institutional rigidities and, in this case, the interplay between the undertakings, the electricity commission, the finance houses, the manufacturers and government. Lack of access to the records of both manufacturing companies and the finance houses precluded the pursuit of such an investigation in this article, but it certainly seems likely that the domestic electric appliance industry might be a further area deserving of exploration in terms of 'institutional failure'.[14]

The significance of credit in stimulating the demand for electric consumer durables may be assessed in terms of the percentage of goods which were sold on hire purchase terms, revenue obtained from the operation of the schemes and revenue obtained from any resultant increase in the domestic use of electricity.

The annual output of vacuum cleaners just before the Second World War has been variously estimated at between 400,000 and 500,000.[15] Assuming the higher bound of 1939 sales, 375,000 vacuum cleaners were sold on hire purchase terms in that year. The average retail price in 1939 was £7. A gross annual turnover of £2.6 million on hire purchase sales alone amounts to roughly 1.7 per cent of all expenditure on furniture, furnishings and household equipment in the U.K.[16] Sales of radio receivers and radiograms rose from just under half a million in 1930 to nearly 2 million in 1937.[17] An average of £8 per set would yield a total expenditure of £16 million in that year. The estimated value of hire purchase sales in 1937, excluding interest payments, would therefore be £12 million, equivalent to 7.8 per cent of all expenditure in furniture, furnishings and household equipment in UK.[18] Domestic electric appliances, however, covered a very small proportion of hire purchase business carried on by finance houses. Advances by Bowmaker for domestic electric appliances accounted for only 2.73 per cent of all advances in the year ending December 1936, whereas wireless and musical instruments accounted for 21.21 per cent in the same year.[19]

Jefferys lists electric fires, irons, kettles, toasters and other household appliances under one category. He claims that only 10–15 per cent of these goods were distributed by the supply authorities, and that it was usual for them to 'sell' goods on hire or hire purchase terms. This percentage figure undoubtedly underestimates the role played by the supply authorities in the distribution of electric cookers, washboilers and water heaters. Distribution figures based upon unit sales distort the 'sales' accounted for by the supply authorities. The number of irons in use just before the war has been estimated as six to seven million, or a permeation level of 80 per cent of wired homes.[20] Permeation levels for electric cookers, wash boilers and water heaters were 16.9 per cent, 3.5 per cent and 5.6 per cent respectively in 1938 (of wired homes), representing units in use of 1.5 million, 0.3 million and 0.5

million respectively.[21] The supply authorities were interested in heavy power-consuming appliances, such as cookers, wash boilers and heaters rather than in small power consumers such as irons and kettles.

There is limited data with which to analyse the percentage of sales deriving from deferred payment consumers. Jefferys claims that it was usual for the supply authorities to 'sell' goods on hire or hire purchase terms, but does not quantify his observation. The limited evidence available suggests that between 86 per cent and 99 per cent of the Hull undertaking cookers were hired between 1935 and 1938 whilst in Manchester levels varied between 90 per cent and 98 per cent.[22] How far these two undertakings represent the norm is impossible to ascertain. Assisted wiring consumers represented from 6 per cent to 29 per cent of all domestic consumers (see below). Given the lack of data it proved impossible to estimate the number of domestic consumers who availed themselves of any of the three facilities. The returns of the Electricity Commissioners, however, were used to analyse the revenue implications.

In the financial year 1927/28, total revenue from the rental of meters, apparatus and wiring (domestic) amounted to £1,093,853, or 2.05 per cent of all revenue. By 1937/38 revenue from this category totalled £3,001,440, or 3.27 per cent of all revenue.[23] More revenue was forthcoming from work done for consumers and the profit on the sale of fittings. In 1927/28, £1,303,805 was earned from this category; by 1937/38 the revenue was £3,299,172. In terms of total revenue, these amounts represent 2.44 per cent and 3.59 per cent respectively.[24] Revenue accruing from the combined categories of rentals and work done/profits was, however, minute when placed in the context of total revenue from domestic lighting, heating and cooking. In 1927/28, total revenue from the sale of domestic electricity was £24,137,713 or 45.26 per cent of total revenue. By 1937/38 total revenue from this category was £51,846,288 or 56. 42 per cent of all revenues.[25] These results show quite clearly that the hire and sale of fittings was financially worthwhile only insofar as it led to increased use of domestic electricity. More was spent on apparatus and wiring on hire than was earned on rental and profit combined. In 1932/33 (the first year for which figures are available), £5,949,121 was spent on apparatus and wiring on hire; 1.36 per cent of all expenditure. By 1937/38 £16,772,488 was thus spent; 7.03 per cent of all expenditure.[26]

The desired effect of assisted wiring, hire and hire purchase was to boost sales of domestic electricity. Thus any evaluation of the 'success' of credit as evidenced by electric consumer durables in the period is problematical. 'Success' measured in the terms of the supply authorities depended upon increased use of electric power in the home, which essentially meant the promotion of heavy power consuming appliances. 'Sales' of appliances were only significant insofar as they were viewed as a means to an end. 'Success' to the manufacturers of electric household durables was differently determined. Their aim was to promote sales *per se* of all domestic appliances – be they low or high power consuming appliances. The opposing definitions of success in fact may be credited with working *against* the interests of the manufacturers. The publicity, the credit facilities and the 'special schemes' (for example, a tariff incorporating cooker rentals) of the undertakings were directed almost exclusively to the heavy power consuming gadgets. Moreover, the primary concern to boost consumption may have held back design innovation; contemporary trade journals criticised the authorities for their policy of taking in 'outdated' appliances and 'refurbishing' them. Manufacturers claimed that the overhaul policy reduced the replacement market – and as such restricted their ability to promote sales by the introduction of design and/or aesthetic improvements.[27] Yet again then we have evidence of rigidities in the market: in this place reflecting the divergent aims of manufacturers and supply companies, both whom were seeking to maximise their profits; the means to that end were, unfortunately, opposed.

The claims were not entirely unfounded. It may be that the replacement market was stinted by the reconditioning policies of the undertakings (cookers, made obsolete by technical and design improvements were overhauled so that they incorporated such improvements). Credit facilities as such, whilst overcoming the initial cost and inertia constraints on initial acquisition, may have had a dampening effect upon the replacement market. Given low ownership in the 1930s, however, market growth was at that stage in the diffusion process of a 'new' good where new rather than replacement dominated demand; as such the manufacturers were probably overstating the case.

If 'success' is determined by electricity industry criteria then estimates of increases in domestic electricity consumption have to be taken into account. Unfortunately, data with which to explore this analysis are extremely limited. Revenue from increased use of domestic electricity resulting from the hire and hire purchase of cookers was not available in the official returns, but estimates were deduced from various primary sources. The resultant figures are underestimates since they reflect the returns of 450 out of 650 undertakings and overestimates since it has been assumed that cookers recorded in the survey were hired or sold on hire purchase terms. *The Electrical Age* estimated that a cooker for three to four persons would consume one unit per person per day. The cost of running a cooker depended on the unit price, which could vary from ½d. to 2d. per unit.[28] Annual consumption of electricity for cooking purposes is variously calculated to have been between 1,500 and 2,000 units per annum. The former figure was cited by *Electrical Age* as typifying consumption for a family of four persons.[29] 1,500 units per annum would yield an annual charge for cooking only of £3.125 at ½d. a unit, £6.25 at 1d. a unit and £12.5 at 2d. a unit. *Electrical Trading* reported that there were 981,000 cookers in use for the year ending March 1938.[30] The undertakings included in the survey account for 69 per cent of all undertakings at that date. A 69 per cent hire availability level by 1938 may be assumed – 66.93 per cent offered the facility in 1934. If we ignore (for the reasons stated above) Jefferys' claim that 'all' the cookers 'sold' by the undertakings were 'sold' on hire or hire purchase terms and take the lower bound Manchester figure of 86 per cent, this would yield 863,280 cookers on hire in 1938, indicating a revenue from hire/hire purchase cookers, (in terms of domestic electric consumption of £2.7m at ½d. a unit) of £5.4 million at 1d. a unit and £10.79 million at 2d. a unit. The national revenue from domestic lighting, heating and cooking for the year ending March 1938 was £51.9 million.[31] Revenue from domestic consumption of electricity by hired cookers thus represents 5.27 per cent (at ½d. a unit), 10.53 per cent (at 1d. a unit) and 21.05 per cent (at 2d a unit) in that year. It also proved impossible to extract data on electricity consumption relating to consumers who availed themselves of the assisted wiring schemes. What is apparent, however, is that the undertakings had to ensure an adequate consumption level by making it one of the 'rules' of the scheme that the consumer had to use a given number of units each year. Thus in Bolsover the rule was 'no other illuminant to be used until 1000 units have been consumed or paid for'; in Eastbourne and Hastings minimum consumption levels of £1 a year were stipulated; Swansea would only accept 'a minimum consumption of 10 units per point installed per annum'.[32] In this way, some undertakings were able to ensure that assisted wiring consumers did actually use a requisite amount of electrical power.

Undoubtedly, the operation of the schemes would not have been financially worthwhile had it not been for the resultant increase in domestic electricity consumption. The undertakings which ran the schemes viewed them as the basis of market growth. Thus the Welwyn undertaking was in no doubt that 'Whilst considered by itself there is little if any profit to be made out of hire of cookers and other apparatus, in association with the supply of electricity substantial benefits are to be gained'.[33] Those which did not run schemes did not do so merely because they were apathetic or unenterprising. Labels of 'failure' cannot automatically be pinned to the deviant undertakings. The reservations expressed about the return on expenditure and the work incurred in running such schemes were well founded. For example, the Wolverhampton undertaking claimed that 'in itself, a hire scheme was not worth having, there was a great deal of work and worry attached to the same, and the net profit possible was small if hire charges were fixed on a basis sufficiently attractive to create expensive business'.[34]

More understandable were the reservations expressed by undertakings operating in areas with a high proportion of transient residents. As the Northmet Co. found out, cooker hire in districts with a rapidly changing population was uneconomic since each cooker had to be renovated on change of tenancy. The company thus found 'That the reconditioning costs make the scheme uneconomical, or, at the best, make it difficult to reconcile low hire rentals with energy supplied at "2d. per unit"'.[35]

TABLE 1
MANCHESTER: FINANCIAL RESULTS OF HIRE FACILITY 1933-38

	Revenue from Appliances on Hire			Expenditure on Domestic Appliances on Hire (Repair & Maintenance)		
1933	£14,338	2s.	8d.	£13,142	5s.	4d.
1934	£20,152	14s.	11d.	£22,378	3s.	6d
1935		n/a			n/a	
1936		n/a			n/a	
1937	£21,194	14s.	10d.	£24,746	10s.	1d.
1938	£22,492	18s.	1d.	£31,835	6s.	11d.

Source: Manchester Record Office, Local Studies Library, Annual Reports of the Electrical Engineer.

Undoubtedly, the operation of any of the facilities did involve time and expense. The hesitation displayed by some undertakings was based upon the cost of repair and maintenance. Table 1 above details the experience of the Manchester undertaking for example and underlines this negative aspect. In every year for which figures are available, save 1933, the Manchester undertaking was spending more on the repair and maintenance of cookers than it actually received from rentals. In strict financial terms of expenditure and income from the actual operation, hire facilities did not pay the undertakings. These, however, were not the terms on which farsighted undertakings measured the success of the schemes. Gains were to be accrued from increased consumption which would result from the growth of appliance usage. The undertakings mostly accepted this truism. The few exceptions to the rule, however, continued the shortsighted policy of treating operating costs as a decisive impediment to facility introduction. Short termism is not unique to manufacturing performance; it is a criticism which can also be applied to the supply industry. In this respect, the attitudes and policies of the deviant electricity authorities in the interwar period add more evidence for the short termist thesis on British economic decline.

III

Cost and Learning Curve Implications: Qualitative Evidence

This section examines the implications of credit in relation to consumer demand, and the diffusion of new products in terms of its role in overcoming cost and learning curve constraints. Purchase prices could have acted as a major constraint on the diffusion of ownership. Purchase costs of electrical goods remained high relative to consumer disposable income throughout the 1930s. Outright purchase was out of the question for many people. Although prices did fall domestic electric appliances were too expensive for most households.[36] Just before the war, refrigerators were costing 16.3–24.8 per cent, cookers, 4.3–14.9 per cent, and standard firebar electric fires 0.57–0.82 per cent of the average annual earnings of employees in manufacturing.[37]

The problem of high purchase costs was compounded by high installation costs and running costs. The decision to acquire electric appliances was not merely a function of first costs. One had to have electric power in the home and the running costs had to be taken into consideration. Although costs fell in the period, electricity installation remained an expensive undertaking. In 1919 the cost of installing a modest lighting system was £11 – £20; by the end of the period that cost had fallen

TABLE 2

ESTIMATED POTENTIAL WEEKLY EXPENDITURE ON DOMESTIC ELECTRICITY

Charges

1.	Standing Charges		8d.
2.	Assisted Wiring Charges		6d.
3.	Electricity for Lighting at Unit Charge of		
	(a)	1d.	2.31d.
	(b)	½d.	1.16d.
4.	Electricity for Cooking at Unit Charge of		
	(a)	1d.	23.0d.
	(b)	½d.	11.5d.
5.	Hire Charge		
	(a)	Minimum rate (Leicester and Preston in 1938)	4.62d.
	(b)	Maximum rate (Plymouth in 1934)	7.66d.
	(c)	Mean rate	5.51d.

Potential Weekly Expenditure

A. 1 + 2 + 3(a) + 4(a) + 5(a) = 3.58s.
B. 1 + 2 + 3(b) + 4(b) + 5(a) = 2.61s.
C. 1 + 2 + 3(a) + 4(a) + 5(b) = 3.91s.
D. 1 + 2 + 3(a) + 4(a) + 5(c) = 3.74s.
E. 1 + 2 + 3(b) + 4(b) + 5(b) = 2.86s.
F. 1 + 2 + 3(b) + 4(b) + 5(c) = 2.68s.

Sources:

Standing Charges: Electricity Council Archives, EDA Bulletin, No. 1228. (September 1935), p. 9.

Assisted Wiring Charges: Due to lack of information the Manchester rate has been used. Manchester Record Office, Local Studies Library, 352, 942, No. 132, Epitome of Proceedings.

Electricity for Lighting: The average annual consumption per consumer for electric lighting only was 120 units per annum or 2.31 units per week. Electricity Council Archives, EDA Bulletin 1228 (Sept. 1935), p. 9. Data recording unit costs in each case (town) taken from Garcke's *Manual of Electricity Undertakings* (annual) and Benn Brothers, *The Electrician: Annual Tables of Electricity Undertakings* (annual).

Weekly Hire Charge: *Electrical Trading* (April 1938), p. 62 (Hull); Manchester Record Office, Local Studies Library, Manchester Finance Committee Minutes, 1 Dec. 1938; *Electrical Trading* (April 1939), p. 53 (Liverpool) and p. 54 (Preston); Coventry Record Office, Electricity Company Minutes; *Electrical Trading* (April 1938), p. 61 (Leicester); Plymouth Record Office, Plymouth Electricity and Street Lighting Committee; Hornsey Record Office, Hornsey Electricity Committee Minutes (18 Nov. 1937); *Electrical Trading* (April 1938), (West Ham).

Running costs of electricity for cooking: Estimated as the cost of the 1250th unit per annum (24th per week).

to £5 – £6.[38] In 1936, 75 per cent of the population had an average weekly income of £5 or less.[39] Domestic electricity installation was, in other words, a costly exercise. Running costs fell substantially during the 1930s. The mean marginal cost of cooking with electricity in the 52 sample towns of this study fell from 4.668d. in 1932 to 3.404d. in 1938. (Standard deviation 1.769 and 2.049 respectively.)[40] The Ministry of Labour survey into the weekly expenditures of working households in 1937–38 reported that the average weekly expenditure on fuel and light for an industrial working class family was 6.42s., of which expenditure on coal amounted to 3.17s.[41] This means that the amount available for expenditure on electricity and/or gas for lighting *and* other domestic uses was 3.25s. a week. The potential weekly costs of using electricity via deferred payment schemes are presented in Table 2.

The industrial working classes could have met the potential electricity bill *if* unit costs were levied at ½d. a unit. Any charge above that rate would have prohibited the use of electricity over and above lighting requirements. The upturn in the domestic use of electricity in the 1930s undoubtedly reflects the wide implementation of lower unit charges in the decade. In 1932, only 28 per cent of the sample undertakings surveyed offered unit costs of ½d. or under; by 1938 73 per cent did so. One can hardly criticise the undertakings for failing to instigate price reductions. In this respect they appear to have been singularly astute in perceiving and reacting to potential running cost constraints. The table also points to the limited effects cost reductions in the hire facility would have in the potential bill when compared with the implications of unit cost reductions. The industrial working classes could have met the estimated expenditure if the hire charges were at their maximum, minimum or mean rates. The decisive factor in the weekly estimated expenditure was not hire charges, but unit costs. At first sight this may seem a surprising conclusion. It was, however, verified by the statistical results reported below. Facility availability, rather than facility terms, 'explained' market growth; consumer inertia rather than cost constraints was, as the industry correctly diagnosed, the real barrier. Farsighted undertakings were those that introduced the hire facility early in the decade and who stressed unit costs rather than hire charge reductions. On such criteria, and on the basis of available source material, Halifax, Burnley and Rochdale would fall in to the shrewd and farsighted categories; Coventry on the other hand would be in danger of relegation from the league table. The former group all offered unit charges of ½d. or less and had introduced all three facilities by 1932; Coventry did not switch to ½d. unit costs until 1937 and did not introduce hire schemes until 1935.

Thus within our case study sample we have evidence of entrepreneurial success and failure. The electricity supply industry justifies the claim that within one 'industry' market leaders and failures exist side by side. Short termism and rigidity were to be found side by side with a very shrewd awareness of the true constraints on market growth – and a determination to overcome such problems. This applies in particular to their assessment of the learning curve constraint.

Evidence from primary sources indicated that the supply authorities recognised that a deterrent to market growth – possibly the key deterrent – was what one might loosely define as 'psychological consumer inertia'. For example, the Welwyn Electricity Co. noted that:

> It is well known that there is a reluctance on the part of the public to purchase what is to it a complicated and mysterious apparatus, involving the acceptance thereafter of the responsibility for its satisfactory working and maintenance . . . It is our experience that the overwhelming majority prefer to hire in preference to shouldering the responsibility of ownership of apparatus which they could not understand.[42]

The First National Convention of the IMEA in 1935 agreed that there were three obstacles to electrical development. The first it identified as the cost factor. The definition, however, implied a learning rather than a cost constraint in that it was claimed that complicated tariffs, which the consumer might find difficult to understand or might interpret as being expensive, should be avoided. The consumer, in other words, had to be taught how to run and budget for electricity. If true, this implies that it was the conservatism of the British consumer rather than price and income factors which constrained market growth. If further implies that the policies of the supply industries were instrumental in giving the British public a 'taste' for consumer durables. The second and third factors also identified the necessity of overcoming consumer inertia and the consequent need for the trade to teach the consumer the benefits of electricity:

> there was fear on the part of many people in using electricity which was due to lack of education in matters concerning electricity, and thirdly, there was a considerable amount of apathy to be overcome among people who were using other forms of heating and cooking and were not prepared to try out any new method.[43]

Four years earlier, an IMEA Convention had identified five reasons that precluded electrical development in the home, of which only two related to cost constraints. The other three reasons were: want of knowledge on the part of the consumer (ranked first), innate conservatism towards something new (ranked third) and 'vested interests' (ranked last).[44]

The trade was not imagining that consumer inertia existed nor was it using consumer inertia as an excuse. Attitudes to the relative merits of different fuels may be gauged from the Heating and Ventilation of Dwellings Study published in 1945. The study asked a mixed class composition of housewives to give reasons for their likes and dislikes of electricity, gas and solid fuel. 5,268 women were included in the sample. 2,233 said they preferred gas. The most popular reason given was that the women were 'used to it' (32 per cent of those prefering gas cited this explanation). Of the 985 prefering solid fuel, 272 (27 per cent) used the same explanation. Cost was a relatively unimportant factor. 79 women said they preferred electricity; of this number 29 per cent (205) said they found it cheap and economical. Of the 205 who expressed a dislike for electricity only 78 (38 per cent) cited 'expensive' as their reason. In fact, the survey indicates that the housewives found solid fuel and gas more expensive. 51 claimed they disliked solid fuel because of the expense; 181 used this reason for their dislike of gas.[45] Consumer inertia was not a figment of the electricity industry's imagination; it was both real and very strong – among women. The fact that the users of electrical appliances were, in the final analysis, women, had tended to be bypassed. Yet, as recent research has shown, 'feminisation' of the demand function is essential if the consumer durables 'revolution' is to be fully understood.[46] An obvious question is how far does this interpretation of the 'inertia' constraint square with the economist's views of the importance of credit in stimulating the demand for consumer durables.

IV

Cost and Learning Curve Implications: Quantitative Evidence

The role played by credit in stimulating consumer demand has long been accepted by economists.[47] It has been shown that learning curves are an important feature of the diffusion process. By a learning curve effect is meant the learning process that society goes through before demand reaches its equilibrium level. The process is usually characterised by several phases or time lags during which the consumer becomes aware of the good's existence *per se*, understands the good's characteristics and potential, and finally translates this understanding into a decision to acquire the commodity. All the phases involve a learning process during which the potential consumer is persuaded over time to 'purchase'. Deferred payment plays a crucial role in reducing the time lags in two respects. Firstly, it may overcome a 'reluctance on the part of the public to purchase what is to it a complicated and mysterious apparatus, involving the acceptance thereafter of the responsibility for its satisfactory working and maintenance'.[48] This was particularly noticeable in the early years of the television when the consumer deferred outright purchase until s/he was satisfied that initial defects and unsatisfactory features had been overcome. In terms of electric consumer durables this would constitute an inertia towards 'learning' how to use electricity as opposed to gas and/or solid fuel. Secondly, deferred payment may bring into the market the consumer who 'does not have the funds available immediately to implement his decision to buy'.[49] At this stage the will is there, but the funds are not. In electric consumer durable terms, this would constitute the period when outright costs were, relative to disposable incomes, too high.

The problem was to reconcile the theoretical aproach to the role of credit with the qualitative evidence given above. An explanatory model was designed to test the importance of credit in both the 'learning' and 'cost' implications above. The aim was to assess the explanatory powers of the independent variables; model specification was, as such, directed to this end (rather than to, for example, the elaboration of prediction models estimating threshold and saturation levels). Model specification was also constrained by data availability. For example, observation for only seven years precluded any sensible estimate of sigmoid curves. The model as such reflects the constraints of the economic historian rather than the ideal world of the econometrician. Initial research on the growth of the market for domestic electric cookers in the 1930s has been discussed elsewhere and will not be repeated in this articles.[50]

The basic model is given in Figure 1.[51] It is a single equation model embodying 14 explanatory variables for 52 cases (towns) run separately for each of the years 1932 to 1938. The dependent variable, HWC, is specified as the percentage of households in each town where a domestic cooker had been 'connected'.

FIGURE 1

BASIC MODEL TO EXPLAIN THE GROWTH OF THE MARKET FOR DOMESTIC ELECTRIC COOKERS

$$\begin{aligned} \ln HWC_{it} = {} & \beta_1 + \beta_1 \ln HW_{it} + \beta_2 \ln YAW_{it} + \beta_3 \ln YH_{it} \\ & + \beta_4 \ln YHP_{it} + \beta_5 \ln MCCE_{it} + \beta_6 \ln MCCG_{it} \\ & + \beta_7 \ln MCCF_{it} + \beta_8 \ln HWDS_{it} \\ & + \beta_9 \ln HWW_{it} + \beta_{10} \ln RMA_{it} + \beta_{11} \ln HSPA_{it} \\ & + \beta_{12} \ln AHI_{it} + \beta_{13} \ln CLI_{it} + \beta_{14} \ln QHC_{it} + \beta_{15} TD_{it} + \varepsilon_{it} \end{aligned} \qquad \ldots\ldots\ldots\ldots(1)$$

where:

$i = 1, \ldots\ldots 52$

$t = 1932, \ldots\ldots$ or 1933, or 1934 .... (i.e. for each separate year)

TD_{it} is the town dummy. There are 52 cases (towns) in the sample.

ε_{it} is the random error term.

ln denotes the log transformation of each variable in the i^{th} town for the years t_2 to t_8.

Variable specifications are detailed in Appendix 1.

Consumer demand theory would anticipate model explanation being dominated by price and income variables. Thus one would expect strong (large and statistically significant) positive income coefficients and strong negative price coefficients. Theory would suggest the overriding statistical importance of the income coefficient. The price effects incorporated in this model relate to marginal costs of cooking with gas, electricity and solid fuel. If the publicity of the industry is to be believed then extremely strong negative coefficients for the electricity charges should dominate the price variables. The qualitative evidence

TABLE 3

STATISTICAL SUMMARY OF RESULTS FOR LOG-LINEAR CROSS SECTION MODEL, 1936.
(Standard errors in parentheses)

$$\begin{aligned} \mathrm{HWC} = -1.75 &+ \underset{(0.14)}{0.28\,\mathrm{YH}} + \underset{(0.14}{0.30\,\mathrm{YAW}} + \underset{(0.77)}{2.8\,\mathrm{MCCG}} \\ &+ \underset{(0.21)}{0.36\,\mathrm{HWDS}} - \underset{(0.34)}{0.58\,\mathrm{HWW}} - \underset{(0.24)}{0.53\,\mathrm{HSPA}} \end{aligned}$$

$$\bar{R}^2 = 0.37$$
$$\bar{S} = 0.83$$
$$F = 6.0 \qquad (F = 2.3)$$

reported above predicted that model explanation would be dominated by the three deferred payment variables (hire purchase: YHP; hire: YH; and assisted wiring: YAW). The evidence further predicted that facility availability would best 'explain' market growth on the premise that the key barriers to growth were consumer inertia rather than cost constraints. The results reported below do not fit with standard economic theories as to the price and income effects; they do, however, underline the role played by credit facilities in overcoming consumer inertia.

Our results indicate that electric cooker ownership was not determined by average household income. Demand was apparently income inelastic. The results summarised in Appendix 2 are hardly surprising. Average household income revealed income inelasticities because the variable specification was depressed by the large numbers of households living on low waged incomes. Subsequent research has demonstrated that the income determinant of consumer demand in the 1930s is best understood in income distribution rather than total average income terms.[52] Demand in this sense is explained by the large numbers of people who had an annual income of less than £200 a year – 75 per cent of the population.[53] Table 3 details statistical results for 1936.

The gas industry would have found the price coefficients reported in Appendix 2 unpalatable reading. Gas coefficients dominated model explanation; consumers it would appear responded more to an increase in gas than to a fall in electricity costs. The results thus indicate that English consumers were eminently rational in their decision-making processes: the decisions were evidently based on relative running costs. As such, publicity campaigns of the electricity industry which spelt out the comparative cost advantages of electricity over gas struck home in a crucial area of the consumer decision making process. Electricity costs however did not figure in the model explanation: a result which probably reflected the lack of variation in electricity charges over cross section.

Given the lack of variation in hire charge observations, it was hardly surprising that the inclusion of QHC into the explanatory national model yielded extremely weak statistical results. Demand was hire charge inelastic. The inclusion of QHC into the stepwise regression moreover reduced $\bar{R}^2$ by 0.000658. QCH in other words did not contribute to model explanation. These results are important, however, since they illustrated the stronger explanatory powers of the availability of the facility availability (YH) over charges for hire (YHC). This implied that learning curves were more important than cost constraints in determining market growth.

An additional simple statistical technique was used which did add to the analysis of cost constraints. Contingency table analysis explored the grouping of the hire charge (QHC) and cooker ownership (HWC) variables. The results, summarised in Appendix 3, indicate that there was some relationship between high hire charges (over 6s. a quarter) and low cooker ownership levels in 1937 (less than 10 per cent of all households in each case (town)). Of the 13 towns in the sample which charged more than 6s. a quarter, seven had ownership levels of less than 10 per cent. High hire charges may have been an *additional* deterrent to market growth. Low hire charges, on the other hand, do not appear to have been a strong contributory factor. Of the 12 towns offering charges of less than 4s. a quarter only three had ownership levels of over 20 per cent. It may be, of course, that facility charges were influential over time. The absence of any observations over time impaired our understanding of cost constraints, and as such it was not sensible to put forward any definite conclusions as to the impact of hire charges. The qualitative and quantitative results reported above indicated that facility availability rather than facility charges were the crucial determinant. Lack of data precluded the testing of a flow cost effect over time.

The coefficients on YH and YAW show that it was the availability of the hire and assisted wiring schemes which helped increase the number of homes with electric cookers. Hire purchase on the other hand is shown to have been statistically insignificant. Cross section analysis thus confirmed the key role played by facility *availability* rather than facility terms and conditions. The results as such indicate that the importance of the facilities in the growth of 'electrified homes' lay less in their contribution to overcoming cost constraints than in their contribution to overcoming consumer inertia. Some degree of caution is, however, called for in this respect. The cross section results indicate that the longer a town had operated wiring and hiring schemes, the higher cooker ownership was likely to have been. To demonstrate conclusively the consumer inertia thesis one would need data on the proportion of hired to total cookers and the number of consumers who having first acquired a cooker on hire terms then switched to outright purchase. Since this information is non-existent a cautionary note is called for in the cross section interpretation; the results could be read as the longer are hiring facilities available, the more cookers are hired. Evidence from contingency table analysis disputed this possible interpretation. As Appendix 4 shows, whereas there are grounds for believing that there was a connection between low ownership and recent facility introduction, there are only very tenuous grounds for assuming that high ownership may be explained in terms of long term facility introduction.

The coefficients of the other explanatory variables, notably domestic servants, women working and private housing (weak positive; strong negative and fairly strong negative respectively) have been discussed in detail elsewhere. The question of technology in the home and its implications for household labour and women's participation in the labour force merits and has received separate in-depth analysis.[54]

The statistical results would have presented sobering evidence to the electricity undertakings: their much mooted deferred payment schemes, assessed in terms of their publicised cost benefits, were irrelevent when compared to the very important contribution gas made to the promotion of electric consumer durables. The most statistically significant contributory coefficient in the model was the marginal cost of cooking with gas – with an extremely strong inverse relationship in all years. Ownership of electric durables was, associated less with any *reductions* in hire scheme costs but with increases in the marginal cost of cooking with gas, and the *availability* of deferred payment schemes. Demand in this sense was determined by relative running costs and learning curve effects rather than any standard income/price explanations.

V

Conclusion

This article has analysed the contribution of deferred payment schemes to the growth of the market for domestic electric appliances in the 1930s. The industry's own benchmarks have been used, that is, the contribution of the schemes to increased consumption of electricity in the home and, underlying this overriding consideration, the roles of the schemes in overcoming the cost and inertia constraints the industry believed it had identified as potential constraints on market growth. It is clear that these schemes did help to boost increased use of electricity in the home and that they did play a role in overcoming cost and inertia constraints. However credit was not solely responsible for the growth of the market for domestic electrical appliances, and thus by definition for the growth of domestic power consumption. In this sense, the industry was only partly correct. The important consideration was the relative costs of using electricity as against gas in the home.

Qualitative and quantitative evidence on credit suggests that economic historians, by undermining institutional elements in the demand function, have ignored a vital explanatory factor underpinning the growth of the market for domestic electrical appliances. Deferred payment played a crucial role in market development in overcoming consumer inertia. This paper suggests that it is now time to incorporate the role of credit into our understanding of the diffusion of new products in the 1930s.

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NOTES

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1. B. Elbaum and W. Lazonick (eds.), *The Decline of the British Economy* (Oxford, 1986); W. Lewchuk, *American Technology and the British Vehicle Industry* (Cambridge, 1987); S. Tolliday, *Business, Banking and Politics: The Case of British Steel, 1918–1939* (Cambridge, MA, 1987).
2. H.W. Richardson, *Economic Recovery in Britain, 1932–39* (1967); D.H. Aldcroft, *The British Economy, Vol.1: The Years of Turmoil, 1920–51* (Bristol, 1986); S.M. Bowden, 'The Consumer Durables Revolution in England 1932–1938: A Regional Analysis', *Explorations in Economic History*, Vol.25 (1988). There has been much debate as to what constitutes a 'new' as opposed to an 'old' industry. See Aldcroft, *British Economy*, pp.141–53; S.N. Broadberry, *The British Economy Between the Wars: A Macroeconomic Survey* (1986); G.N. von Tunzelmann, in C.P. Kindleberger and G. di Tell (eds.), *Structural Change and Leading Sectors in British Manufacturing, 1907–1968* (1982); S.M. Bowden, 'The Demand for Domestic Electric Cookers in the 1930s: A Regional Analysis' (Unpublished PhD thesis, University of London, 1984); *idem*, 'Consumer Durables'; L. Hannah, *Electricity Before Nationalisation* (1979), especially Ch. 5.
3. Bowden, thesis: *idem*, 'Consumer Durables'.
4. Richardson, *Economic Recovery*.
5. These points are all discussed at length in the subsequent sections of this paper. The undertakings were responsible in the period for the supply of electrical power to the home, for the fitting of appliances which had to be connected to the power supply and to a large extent for the provision of the appliances themselves. Lack of archive material from the manufacturing companies meant that this research has concentrated on the promotion policies of the electricity undertakings rather than the manufactures. References to the latter are taken from secondary sources. Prior to nationalisation, local undertakings (both private and municipal) ran their own supply schemes.
6. S.N. Broadberry, 'Perspectives on Consumption in Interwar Britain' (University of Warwick, Department of Economics Discussion Paper, 1987).
7. J.B. Jefferys, *The Distribution of Consumer Goods* (Cambridge, 1950), p.297.
8. Letter to author from C.E. Everett, Group Registrar, United Dominions Trust, 17 June 1982; letter to author from R.E. Maccaulay, Group Personnel and Administrative Manager, Lloyds & Scottish, 21 June 1982, enclosure: 'Total advances for domestic appliances. 1935–37'. By 1927 'instalment buying accounted for 60 per cent of car sales' in Britain. R.A. Church, 'The Marketing of Automobiles in Britain', in A. Okochi and K. Shimokawa (eds.), *Development of Mass Marketing: The Automobile and Retailing Industries* (Vol.7 of the International Conference on Business History, Tokyo, 1981)
9. Jefferys, *Consumer Goods*, p.300.
10. Electricity (Supply) Act, 1926, s.48.
11. Electricity Council Archives, Electricity Commissioners, 'Report on the Assisted Wiring, Hire and Hire Purchase of Electrical Apparatus' (July 1930).
12. Electricity Council, Intelligence Section, Electricity Commissioners, *Annual Reports*. (1930 and 1935).
13. Benn Brothers, 'Annual Tables of Electricity Undertakings', *The Electrician* (1938). 603 undertakings were cited, of which 471 offered hire facilities, and 563 offered assisted wiring facilities.

14. N.F.R. Crafts, 'The Assessment: British Economic Growth over the Long Run', *Oxford Review of Economic Policy*, Vol.4. No.1 (1988), p.xvii. See also Tolliday, *Business, Banking and Politics*; Lewchuk, *American Technology*; and Elbaum and Lazonick, *Decline of the British Economy*.
15. Lower figure (with reservations as to it being too low) cited by Political and Economic Planning, 'The Market for Household Appliances' (1945), p.56. Upper figure cited by *Electrical Trading* (October 1944), p.47.
16. Including interest payments, but excluding monies not received. There are two complications that we should address in the above figures. Firstly, they ignore the secondhand market which, by all accounts, flourished in the vacuum cleaner market. The effective life of the models varied from between five years for the cheaper makes and ten years for the more expensive models. But the natural process of obsolescence was complicated by the growing practice of part exchange which meant that many machines were withdrawn from use whilst they were still in good working order. Many of the machines thus discarded found their way back to a buoyant secondhand market. There is no quantitative evidence as to the extent of the practice, but much qualitative confirmation as to its existence and 'popularity'. The second complication relates to the practice of 'snatching back', a practice which achieved notoriety and eventually contributed to Ellen Wilkinson's Hire Purchase Act of 1938. Prior to this Act, if a hire purchaser defaulted, for whatever reason, firms could legally take back goods, even on the penultimate payment. The dual practices of 'snatching back' and 'trading in' indicate that we should treat production figures with caution and not use them for any precise estimates of ownership levels. Percentage expenditure calculated using R. Stone and D.A. Rowe, *The Measurement of Consumers' Expenditure and Behaviour in the United Kingdom, 1920–1938* (Cambridge, 1966).
17. Aldcroft, *British Economy*, p.195.
18. Calculated using Stone and Rowe, *Consumers' Expenditure and Behaviour*.
19. Letter to author from C.E. Everett, Group Registrar, United Dominions Trust, 17 June 1982; letter to author from R.E. Maccaulay, Group Personnel and Administrative Manager, Lloyds & Scottish, 21 June 1982, enclosure: 'Total advances for domestic appliances, 1935–37'.
20. *Political and Economic Planning* (hereafter *PEP*) (1945), p.xxix.
21. Letter to author from R.E. Manccaulay, 21 June 1982; *PEP* (1945), p.xxvi (water heaters); p.xxvii (wash boilers); p.69 (cookers).
22. Hull Local Studies Library, Ref. 7520, Annual Reports of General Manager [of the electricity undertaking]; Manchester Record Office, Local History Library, Annual Reports of Electrical Engineer.
23. Electricity Commissioners, *Annual Financial Statistics* (1927/28 and 1937/38), Table 23.
24. Ibid.
25. Ibid.
26. Ibid., Table 20.
27. *PEP* (1945), p.xvi. It has not been possible to test this hypothesis by reference to source material from manufacturing companies. The evidence from the local electricity undertakings and the trade journals indicates considerable consumer pressure for up-to-date innovations. This pressure appears to have derived from existing rather than potential consumers: the potential *replacement* rather than any 'new' consumers. The policy of adding new working parts and/or enamelling existing cookers may have reduced demand in that it negated purchase of *replacement* of more up-to-date models. Archive material does not indicate that the policy deterred new consumers. If anything, demand may have been stimulated by the knowledge that cookers could and would be reconditioned. The claim that manufacturers' sales were blunted by the reconditioning policy implies a buoyant replacement market: the cost and income restraints discussed below would throw serious doubt on such an assumption.
28. E. Edwards, 'At An Economic Rate,' *The Electrical Age* (October 1936), pp.744–5.
29. E. Edwards, 'The Case for Electricity,' *The Electrical Age* (July 1932), p.359.
30. 'Domestic Appliance Survey,' *Electrical Trading* (year ending March 1938), pp.3–8

31. Extracted from British Electricity Authority, Report and Accounts (1947–49), p.252. (Figure refers to Great Britain, excluding the North of Scotland District.) Electricity Council Intelligence Section, File IS 545.
32. Electricity Council Archives, Electrical Development Association (1928), No.837 and 718.
33. Hertford Record Office, Welwyn Electricity Company Minutes, G.M. 45 C67, 24 June 1936.
34. I.M.E.A. *Proceedings*, (1929), pp.74–5; Electricity Council, Intelligence Section, E.W. Charlesworth, (Wolverhampton).
35. *Electrical Industries* (May 1938), p.208.
36. In 1931, GEC advertised its 'Magnet' 6–10 gallon capacity washing machine at a retail price of £42. By 1934, the price of a standard GEC 10 gallon washing machine had fallen to £29, and in 1935–36 its 'Genalex' 10 gallon GEC machine was retailing at £19.19s. 'Cleaning Appliance Index', *Electrical Trading* (March 1931), pp.83–4; 'Spring Cleaning Appliance Index', *Electrical Trading* (March 1935), p.84. 'Directory of Electric Washers', *Electrical Trading* (Jan 1936), pp.57–8. In 1932, a 5 gallon water heater was retailed by Aidas Electric, Bastian and Allen, Credenda Edison and GEC at £9.10s., £9 0s. 6d., £9 15s., £10 18s. 6d., and £9 15s. respectively. 'Quick Reference Chart of Water Heaters', *Electrical Trading* (May 1932), pp.73–5). Just before the war, the price of a 5 gallon water heater was about £8 18s. *PEP* (1945). In 1926, GEC was advertising a 5.5 lb. 'Magnet' electric iron for 18s., and by 1931 Arora was retailing a 5lb. iron for 15s. 6d. *Electrical Age for Women* (June 1926). In 1934, cookers for 5–6 people cost between £13 and £17 15s. *Electrical Age* (October 1934), pp.744–5. By 1939, a full cooker of the ordinary type with standard finish cost according to size and model between £7 and £18. *PEP* (1945), p.xv.
37. Prices for electric appliances extracted from *PEP* (1945) and related to the average annual earnings of employees in all manufacturing industry. A. Chapman and R. Knight, *Wages and Salaries in the United Kingdom* (Cambridge, 1953), p.104.
38. Hannah, *Electricity Before Nationalisation*, p.187.
39. G. Harrison, and F.G. Mitchell, *The Home Market: A Handbook of Statistics* (1936).
40. Data extracted from annual directories (1931–38) of the electricity industry: Garcke's *Manual of Electricity Undertakings* and Benn Brothers, *The Electrician* (The 'Blue Book), Annual Tables of Electricity Undertakings.
41. 'Weekly Expenditure of Working Class Households in the United Kingdom, 1937–38' *Ministry of Labour Gazette* (December 1940).
42. Hertford Record Office, Welwyn Electricity Company Minutes, GM.L15, 24 June 1936, p.167.
43. Electricity Council, Intelligence Section, *IMEA Convention Proceedings*, First National Convention, 'Discussion on Domestic Electrical Development' (1935), p.109d.
44. *Electrical Times*, 18 June 1931, p.1134.
45. Building Research Board of Department of Scientific and Industrial Research, 'Heating and Ventilation of Dwellings', Post-War Building Studies No.9 (1945), p.154.
46. S.M. Bowden, 'The Technological Revolution that Never Was; Women and Domestic Electrical Appliances in the Interwar Period', forthcoming, *Social History*.
47. See, for example, A.D. Bain, *The Growth of Television Ownership in the UK* (Cambridge, 1964).
48. Hertford Record Office, Welwyn Electricity Co. Minutes, GM.L15, 24 June 1936, p.167.
49. Bain, *Growth of Television Ownership*, p.15. Our understanding of the role of credit would be enhanced by information on the number of 'hire' consumers who ultimately bought electric appliances. Unfortunately, no such information was available from the archives consulted.
50. Bowden, 'Consumer Durables'.
51. S.M. Bowden, 'The Market for Domestic Electric Cookers in England, 1932–38. Variable Sources and Methodology: Specification Search and Regression Results'.

These statistical tables, including in-depth discussion of variable specifications, are included in a statistical backup to this paper available on request from the author.
52. S.M. Bowden, 'Who Bought Electric Cookers in the 1930s? A Study of the Diffusion of New Commodities' (University of Leeds, School of Economic Studies Discussion Paper Series, 1987).
53. Harrison and Mitchell, *The Home Market*.
54. Bowden, 'The Technological Revolution that Never Was'.

APPENDIX 1 VARIABLE SPECIFICATION

(a) *Price Determinants of Demand*

MCCE	is the marginal cost of cooking with electricity.
MCCG	is the marginal cost of cooking with gas.
MCCF	is the marginal cost of cooking with solid fuel.
YAW	is the number of years facilities for assisted wiring had existed.
YH	is the number of years facilities for hire of appliances had existed.
YHP	is the number of years facilities for the hire purchase of appliances had existed.
QHC	is the quarterly hire charge levied for electric cookers. Data available for 1936 only.

(b) *Income Determinants of Demand*

AHI	is average household income in each case (town).
CLI	is the cost of living index.

(c) *Supply Determinants of Demand*

RMA	is the range of models available.
HW	is the percentage of homes wired for electricity.
HSPA	is the percentage of new private housing stock in total number, of houses expressed on a cumulative basis from 1932.

(d) *Other Nuisance Variables*

HWW	is the female participation level in each town.
HWDS	is the percentage of houses with domestic servants.

(e) *Dependent Variable*

HWC	is the percentage of households where electric cookers had been connected to electricity supply.*

*Full variable specification details are given in a statistical backup to this paper, available on request from the author.

APPENDIX 2

Log Linear Cross Section Model (Figure 1 refers).
Summary of Statistical Results. Standard errors in parentheses

		YH	YHP	YAW	QHC	MCCG	MCCF	HW	HWDS	HWW	HSPA	F	R^2	S	Critical
1932	3.44	0.56		0.33		1.67	−1.07	−2.0				6.1	0.38	1.04	2.3
		(0.21)		(0.19)		(0.91)	(0.47)	(0.17)							
1933	−5.15	0.52		0.2		2.27						8.5	0.30	0.99	2.8
		(0.18)		(0.17)		(0.75)									
1934	−4.0	0.41		0.24		2.65			0.21	−0.5		5.4	0.30	0.95	2.4
		(0.17)		(0.16)		(0.85)			(0.21)	(0.39)					
1935	−3.2	0.37		0.16		2.7				−0.32		5.7	0.32	0.89	2.6
		(0.15)		(0.19)		(0.83)				(0.37)					
1936	−1.75	0.28		0.30		2.8			0.36	−0.58	−0.53	6.0	0.37	0.83	2.3
(a)		(0.14)		(0.14)		(0.77)			(0.21)	(0.34)	(0.24)				
1936	−1.6	0.22		0.26	+0.15	2.32			0.15	−0.6	−0.46	4.28	0.31	0.8	2.3
(b)		(0.15)		(0.15)	(0.2)	(0.8)			(0.19)	(0.35)	(0.20)				
1937	0.33	0.25	0.39	0.36		2.0				−0.55		5.4	0.30	0.81	2.3
		(0.15)	(0.24)	(0.15)		(0.78)				(0.33)					
1938	0.63	0.26		0.39		1.6				−0.41	−0.33	5.6	0.31	0.75	3.4
		(0.14)		(0.16)		(0.65)				(0.23)	(0.23)				

MCCE and AHI statistically insignificant and were rejected from the Stepwise regression.

APPENDIX 3

Contingency Table Analysis: Electric Cooker Ownership and Hire Charges

'Low'	hire charges defined as less than 4s a quarter in 1936.
'High'	hire charges defined as more than 6s a quarter in 1936.
'Low'	cooker ownership defined as less than 10 per cent of all households in each case (town) in 1937.
'High'	cooker ownership defined as more than 25 per cent of all households in each case (town) in 1937.

Towns having 'low' hire charges and 'high' cooker ownership

	Quarterly Charge	*Ownership*
		%
Leicester	2.5s	28.26
Derby	4s	47.38
Kingston-on-Thames	2.5s	29.02

Towns having 'high' hire charges and 'low' cooker ownership

	Quarterly Charge	*Ownership*
		%
Middlesbrough	6.75s	0.34
Coventry	6s	7.25
Birmingham	6s	3.57
Hornsey	7.38s	1.71
Barking	6s	2.81
Hendon	8s	4.25
Plymouth	7.5s	6.74

APPENDIX 4

Contingency Table Analysis: Electric Cooker Ownership and Hire Facility Availability

'Low'	facility availability defined as hire scheme available for less than 5 years.
'High'	facility availability defined as hire schame available for more than 12 years.
'Low'	cooker ownership defined as less than 10 per cent of all households in 1938.
'High'	cooker ownership defined as more than 25 per cent of all househodls in 1938.

Towns having 'low' facility availability and 'low' cooker ownership

	Facility Introduced in	*Ownership in 1938* *%*
Middlesbrough	–	0.42
Bolton	1935	9.99
Stockport	–	2.61
Reading	1935	8.64
Hornsey	1937	3.08
Wallasey	–	4.62

–indicates never introduced.

Towns having 'high' facility availability and 'high' cooker ownership

	Facility Introduced in	*Ownership in 1938* *%*
Halifax	1926	26.66
Barrow	1926	25.33

Mean ownership in 1938 = 15.58%
Minimum ownership in 1938 = 0.42%
Maximum ownerhip in 1938 = 59.35%
Standard deviation = 11.823

Number of Years hire facility in operation in 1938: absolute frequency

less than 5 years = 15
6–12 years = 30
more than 12 years = 7

BRITISH BUSINESS HISTORY: A REVIEW OF RECENT PERIODICAL LITERATURE

By PHILIP OLLERENSHAW

This review illustrates the breadth and scope of work in British business history published in journal articles in 1988. No attempt has been to be comprehensive, but brief comments are offered on the contents of much of work, major themes are identified, and attention is drawn to articles of particular significance. In its coverage and length, the essay falls somewhere between the reviews of periodical literature published annually in the *Economic History Review* and the *German Yearbook on Business History*.[1] The first section considers general trends in research. This is followed by sections which summarise and comment on research in mining and manufacturing; the services sector; transport and trade; employers, labour and education; and, finally, multinational enterprise.

I

Church[2] and Slaven[3] published valuable surveys of British business history in 1976 and 1984 respectively, analysing *inter alia* the contents of *Business History* since 1958. Both noted the Anglocentricity of the subject, and the heavy emphasis on the study of individual enterprises and the period 1750–1914. While Church pointed out that very few business historians strayed beyond 1914, Slaven, writing eight years later, detected 'a steady shift of emphasis' towards twentieth-century themes, though some areas such as British banking overseas and the history of the City remained grossly under-researched. In 1983 Hannah, in identifying 'new issues' in British business history,[4] rightly bemoaned the lack of progress 'in systematic integrative work, going beyond company history towards comparative business history dealing with wider themes'.[5] On the evidence of periodical literature published in 1988, none of these generalisations, except the increasing emphasis on the twentieth century, is any longer valid.

Very few articles indeed were concerned specifically with the industrial revolution period (say 1750–1850), and few dealt with a single enterprise. In an effort to diminish Anglocentricity and promote comparative research, a special issue of this journal entitled 'The End of Insularity' published no less than six papers in comparative business history. In fact, looking at the literature as a whole, the urge to compare firms, regions, industries and countries is the most impressive feature of 1988. In addition to the 'The End of Insularity', particular mention should be made of the published proceedings of two conferences which add significantly to the literature on comparative business history. 'East meets West' was the title of the first Anglo-Japanese Textile History

Conference held in Kyoto in September 1987. Published as an enlarged and beautifully produced issue of *Textile History*, the proceedings offer five major papers which set British textile industries in an international perspective, and their contents are reported in sections II and III of this review. The second set of conference proceedings from which British business historians might benefits stem from the 34th annual meeting of the Business History Conference in Atlanta, Georgia, and published as volume 17 of *Business and Economic History*. This annual publication is little known in Britain and deserves a much wider readership; containing in 1988 at least five papers of direct interest to business historians working on British themes. These papers are discussed below. An especially useful feature of this volume is its inclusion of a cumulative author and title index to papers presented at the Business History Conferences in the United States from 1954 to 1988 and subsequently published. Clearly, there is much here of theoretical and empirical interest, and some might regard it as unfortunate that there is as yet no comparable organisation or conference forum in Britain.

One body which has long been responsible for promoting business history in Britain is of course the Business Archives Council, whose annual conference in 1988 took as its theme 'Business Archives and Education'. The published volume of proceedings[6] is a thought-provoking collection of seven papers which explore, *inter alia,* the possibilities for utilising business archives in schools and undergraduate programmes. There has been little systematic discussion of how to increase the appeal of business history in schools and Frances Blow's piece on archival sources in the school history curriculum is timely in this respect.[7] Morgan, with proper distaste for the traditional university lecture-seminar format, floats some useful ideas on how to use business archives, often in conjunction with computers, to enhance skills and stimulate the interest of undergraduate historians of all kinds. Any approach that makes undergraduate learning, in Morgan's words, 'less passive and more participatory' should be welcomed by students, tutors (and employers) alike.[8]

In the same volume Coleman asks what future there is for business archives and identifies the thematic treatment of business behaviour as one of the 'great missing elements' in the historiography of British business.[9] Reflecting rather sombrely on a lifetime of scholarly output, Coleman believes that the educational value of his own books, including *Courtaulds,* has been very limited indeed. He wonders whether there is any intellectual future in the specially commissioned history of a single company, and he goes on to argue the case for a thematic textbook on the business history of Britain. The case for such a textbook is a strong one, and surely there is also room for some carefully selected 'documents and commentary' volumes on British business history which would demonstrate to students of all kinds the sort of potential that business archives have. In 1988 the onus remains on business historians to make their subject more accessible to a broader audience. New products and better marketing are needed now.

Armstrong, in another timely survey, examines the general area of business history and management education, concluding that no progress has been made in 'tailoring' research and publications in business history to the requirements of business schools, and, he suggests, until that happens there can be no future for business history in management education.[10] In a sense the lack of dialogue in Britain between business schools and business historians should not surprise us. There are after all many universities and polytechnics where departments which might share some common, or complementary, interests do not talk to each other. This is a problem that is unlikely to go away in the near future. In a situation of declining resources, any department that initiates dialogue with another is likely to be viewed as engaging in academic imperialism, or as a weak department in need of students, to be met with a demonstration of departmental nationalism. Nothing typifies the differences in tradition and outlook between business historians in Britain and the United States more than the currently expressed opinions on what kind of business history ought to be researched and published. In Britain, scholars continue, perhaps rightly, to call for a reorientation of the subject towards the perceived needs of business schools. In the United States, by contrast, the subject is well entrenched and is widely held to possess integrity as a discipline; so much so that Mira Wilkins in her presidential address to the Business History Conference declares that business historians 'must *not* write for other audiences. If our work is excellent, others will use it'.[11] At present it would seem that in Britain, unlike in the United States, excellence in scholarship is not enough.

It is sometimes suggested that British business historians need to relate their work much more to the overall performance of the British economy.[12] One notable publication of 1988 to take this approach is a special issue of *The Oxford Review of Economic Policy*,[13] containing seven synoptic papers, at least three of which are of direct relevance to business historians. Rubinstein briefly examines social class and attitudes to business life, finding that the prevalent ethos was and is 'future-oriented and sympathetic to business life, with virtually no parallel to the endemic militant hostility to either capitalism or industrialism found almost everywhere else'.[14] Britain's comparative advantage, except between 1790 and 1860, has been with trade, finance and services. This, rather than any decline in 'industrial spirit' or similar factors helps to explain the persistent pull of London. The implication of Rubinstein's paper is that recent trends in the British economy give some grounds for optimism, though a critic might reply that such a view crucially fails to make the distinction between positive and negative de-industrialisation.[15] Margaret Ackrill's essay looks at managers in the British economy since the 1870s, ranging over past and present critiques, explanations of slower growth, multinationals, education and training. Her uncontroversial conclusion is that 'the outstanding impression of

British managers in the last century is their slowness to embrace change', though since the 1970s this slowness has been less in evidence.[16] A third article, by Sanderson on technical education, is discussed in section V below. This collection is arguably the best introduction to Britain's long run economic performance currently available. Brief, controversial in places, but frequently stimulating, it is essential reading for undergraduates and their teachers.

II

In mining and manufacturing the great majority of articles concentrated on the period since the 1880s. The coal industry produced two studies, both focusing on the interwar years and both comparative, though in very different ways. Dintenfass examines the question of entrepreneurial/managerial failure and in so doing takes issue with both Buxton and, to a lesser extent, Kirby. His case is that 'managerial failings' must take much of the blame for the performance of the industry between the wars. It is based on an examination of four collieries (two in West Yorkshire, one in Lancashire and one in Northumberland).[17] Since there were some 2,500 pits producing coal in Britain in the 1920s[18] some may object that the sample here is less than representative,[18] in the same way that Aldcroft's generalisation about entrepreneurial failure in the British economy between 1870 and 1914, also initially based on four examples, could not be seen as definitive or rigorous.[19] Even though some of Dintenfass's evidence does not square with that recently produced by Supple, his article serves as a useful example of the kind of comparative work that has to be done at pit level, and a reminder that corporate forms of managerial organisation did not automatically produce benefits. Supple, drawing directly on his own vast study of the coal industry between 1913 and 1946 adds a comparative dimension in his exploration of the role of the state in the British and American bituminous coal industries.[20] Ostensibly the main reason for state intervention in both cases was the curtailment of excessive competition, but in practice the policies stemmed from the political imperative to bring stability to the position of working miners. The pursuit of this goal led to under-utilised capacity being sustained while the real price of coal was kept relatively high.[21]

In textile history, 1988 saw the publication of some fine work. During the last decade the historiography of the cotton industry has been dominated by the work of Lazonick, but significant gaps still remain and one of these is a full account of attempts to rationalise the industry between the wars. In a well-researched piece culled from his 1984 PhD thesis, Bamberg provides by far the best account yet of this complicated exercise.[22] His article is particularly good on the impact of the refloatation boom of 1919–20 which, he suggests, increased the fixed-interest loan capital of the 'typical' company fivefold. Montagu Norman's real motives for promoting the Lancashire Cotton Corporation are confirmed to have been the maintenance of stability in the banking sector and as a ploy to forestall direct government intervention. The LCC never had the universal support of the banks and was disastrous in its early years, though it was later reorganised and made profitable largely through the efforts of Frank Platt. Bamberg supports Tolliday's recently published conclusions on iron and steel between the wars: that rationalisation depended crucially on concerted action by the state, the banks and the industry, but that concerted action ran counter to the inherited relationship between them. Another important contribution to the business history of cotton comes from Farnie and Yonekawa in an article which extends the latter's comparative work by looking at the growth of very large firms in the world's cotton spinning industries from the 1880s to 1938.[23] In addition to providing a great deal of new information on the capacity and financial performance of many of the largest firms, and providing informative case studies of some of them, the authors emphasise the important point that Britain, because of the external economies unique to Lancashire, remained the bastion of the specialist firm, while integration came to characterise the industry in the USA, Russia and Japan. A useful by-product of this work is to delineate the boundaries of our ignorance about the largest firms in the cotton industry; for example, John Mayall of Mossley Mills, the largest cotton spinner in the world from 1857 to 1891, 'has never been mentioned in any textbook or monograph'.[24]

The leading place once held by cotton in British textile industries is now occupied by hosiery and knitwear, and it is mergers and takeovers in this area since 1945 that form the subject of the first of two articles published in 1988 by Chapman.[25] The tentative conclusion offered by him is that the problem of vertical integration has yet to be solved. Neither Courtaulds not Coats Patons had much understanding of hosiery and knitwear and once family firms had been taken over, hereditary leadership and experience vanished and 'what passed for middle management' simply could not cope. Both groups were highly centralised and neither board spent much time facing up to the inevitable problems which their takeover strategy produced. That failure was the key factor in the contraction in Courtaulds' hosiery business from 21 factories in 1972 to just two in 1986. In Chapman's view 'the takeovers exposed the weakness of hereditary leadership but the new ones lacked the opportunity or the competence to replace it with a better one'.[26]

The continuing importance of clothing and textiles is reaffirmed by Zeitlin who, in a brilliant piece of contemporary business history, examines the British response to changing international trends in the clothing industry in the 1970s and 1980s.[27] Internationally, the change in retailer strategies, led most successfully by Benetton, from price competition to fashion and variety, served to open up new opportunities for European producers and this in turn led to the emergence of Italy as the world's largest net textile exporter (ahead of Hong Kong, South Korea and Taiwan). In Britain, Next and Richard Shops amongst others followed the Benetton lead, and eventually have been joined by

Marks & Spencer. Zeitlin argues that the recent trend towards domestic sourcing could easily be reversed, adding that national government has had little in the way of a coordinated policy for the clothing industry. Local authorities with the knowledge and expertise needed to assist the industry unfortunately have had their financial and policy autonomy sharply curtailed. In many parts of Western Europe local authorities have played important roles in industrial restructuring and employment creation, but the trend in Britain has been exactly the opposite direction.

Both Chapman and Zeitlin symbolise the increasing willingness of British business historians to work in the period since 1945. This is evident too in some of the literature on other manufacturing industries. In one of the few studies of a single firm published in 1988, French brings his knowledge of the tyre industry to bear in a study of the Edinburgh-based North British Rubber Co., the only British footwear manufacturer to move into tyre production.[28] Compared to Dunlop, however, its overseas strategy before 1914 was modest and less successful, since it 'lacked the resources and the ambition' to make direct investment in wholly-owned subsidiaries. Between the wars its strategy was purely defensive and based on cost saving. Not until a link was established with US Rubber in 1937–38 did North British acquire the technology, marketing expertise and capital to change direction. Looking at the history of North British in the century to 1956 one suspects that French's remark about 'a degree of hesitancy' in management could well have been made much more forcefully.

If criticism of management is in order at North British, the same surely applies with much greater force to the modern history of vehicle production by British firms. Two articles focused on this industry, the second of which is directly concerned with an explanation of the post-war problems besetting this exemplar of British manufacturing decline. In the first article, however, Collins and Stratton sketch developments in the design of car factories from the 1890s to 1939 and consider how this was affected by the change from the production of car bodies crafted in wood to those made of steel.[29] The creation of Pressed Steel Ltd. in 1926, sited next to Morris's Cowley works, and the opening of Ford's Dagenham plant in 1931, are seen as the most important developments. Appropriate designs for car factories are no doubt a necessary, though not sufficient, condition for a successful mass-produced vehicle industry and, as Tolliday demonstrates in an excellent synoptic piece, the British automobile industry (BLMC/Austin Rover) was manifestly inadequate in a host of respects.[30] In contrast to the judgements of Michael Edwardes, line management, Labour and Conservative governments and the City, Tolliday persuasively argues that the Austin Rover's troubles did not stem from labour relations problems alone and that these have been magnified out of all proportion.[31] Instead, he stresses the succession of poor models and a contracting marketing and distribution network. Even when the product range did improve, the huge overvaluation of sterling between 1979 and 1983 together with the legacy of a contraction of its European distribution network in the 1970s and a failure to overcome a previously deserved reputation for poor quality and reliability, all conspired to militate against any aspiration to world class status. This article, while not wholly original, is the best brief account of Austin Rover's problems, offering a valuable critique of the Edwardes view and indeed the more recent analysis by Lewchuk.[32]

It was noted above that comparative business history is strongly represented in the periodical literature for 1988. Not every author, however, explicitly considers the problems and pitfalls of comparative methodology. One who does is Liebenau in a wide-ranging if regrettably undocumented piece on the emergence of the pharmaceutical industry in Britain, Germany and the USA before 1914.[33] Liebenau suggests that the scope for 'provisos, exceptions and *ad hoc* assumptions' in comparative business history is substantial, and for this reason it is preferable to start with an industry which has 'a similar type of product and certain parallels in intended markets'. His survey shows that the First World War revealed Britain's dependence on German products, leading directly to organisational change and the introduction, long after Germany and the USA, of legislation (passed in 1925) covering medicines. There is also a welcome discussion of cartelisation which, for British firms, was seen largely as a method of price fixing and a defensive strategy to forestall foreign competition.

Arguably the simplest form of comparative business history considers two firms and one type of product and this is the approach adopted by Margaret Graham in her highly effective study of the role of R & D at Vickers and Alcoa in the development of the aluminium airship in the early twentieth century.[34] Although she ignores Scott's history of Vickers, which might have helped to clarify the kind of political and military pressures bearing on the firm,[35] Graham brings out the fact that at Vickers, a conglomerate in a highly competitive industry, technical research was compartmentalised within its subsidiaries and departments. The company was, however, prepared to accede to a request to build an airship in the US in 1916, but the idea was turned down by the Admiralty and this veto was instrumental in causing the leadership in aluminium technology to pass from the UK to the US. The potential of the airship programme persuaded Alcoa to create a central technical department for R & D which reported to top management. The long term impact was considerable: aluminium as a major material for aircraft, trucks, railways carriages and buses was introduced much earlier than in Britain 'where major new uses of aluminium awaited rearmament with economically insensitive defence applications'.[36]

III

In the financial sector, much of the work in 1988 concentrated on the City and on the role of British banks overseas. Apart from Bamberg's article on the relationship between the banks and the cotton industry there was little research into the role of the commercial banks in Britain in any period. Banking historians may well take exception to the reference made by Davenport-Hines and Jones to a 'tired old debate'[37] about the role of British banks compared to those in Germany. The fact is that despite enormous bank archives we still have very few analyses of how British industry was financed before 1914, and that is perhaps particularly true of the period after 1870. Certainly there has been no dearth of opinions and plenty of shadow boxing, but as yet little informed debate.

Baskin's study[38] of corporate financial markets in Britain and the United States between 1600 and 1914 starts with the revelation that 'deductive theoretical hypotheses based on perfect capital markets cannot always explain actual historical development'.[39] Unfortunately, his personal contribution to such explanation in a British context is virtually nil since his account is largely based on selective quotation from a handful of well-known texts. He simply ignores a substantial body of recent literature germane to his theme. We learn that Prof Baskin is currently writing a financial history from ancient Babylon to the present day, so perhaps that will prove more illuminating. Neal, in another of his forays into the eighteenth century, usefully draws attention to the 'stunning neglect' of John Castaing's *Course of the Exchange* as a source for British economic and financial historians,[40] This was published twice a week throughout the period 1697–1811. Neal suggests that historians may have been deterred from using it simply because of the overwhelming amount of information it contains.

The relative ease with which financial technology could move in the nineteenth century has occasionally been noted by historians. In a study of banking in the British Isles, Munn nicely demonstrates the anticlockwise movement of joint-stock banking from Scotland to Ireland and then to England and Wales.[41] Staying with banking, two articles examine the role of British banks overseas: one in a colonial, the other in an ex-colonial context. Drawing some helpful parallels and contrasts with other recent work on British banks overseas, especially in Iran, Kate Phylaktis provides a clear and balanced analysis of banking in Cyprus during the period of British rule which began in 1878.[42] The Imperial Ottoman Bank, primarily interested in the finance of trade, set up branches only in the major ports and so neglected the credit needs of Cypriot peasants who, in consequence, had no alternative but to go to the money lenders. The Nicosia Savings Bank (later the Bank of Cyprus), established in 1897, was the first of several indigenous banks designed to fill that gap. While foreign banks operated strict credit limits and exported capital, local banks did not, though Phylaktis leaves unanswered the question of where and in what form local banks' reserves were kept. If the Imperial Ottoman Bank and the Ionian Bank could be accused of excessive, if unsurprising, conservatism, the same cannot be said of Barclays DCO which entered the Cyprus market in 1938 through its support for the Central Cooperative Bank. This was indeed a 'radical new move' for British banks overseas, and indicates that conservatism was not universal. In a more modest contribution Stuart Jones looks at the imperial banks in ex-colonial South Africa, focusing on Standard (which opened in southern Africa in 1862) and Barclays DCO (1926) between the wars.[43] He argues that the imperial banks acted as a powerful stabilising element in the South African economy and that oligopoly worked relatively well, 'providing sufficient competition to restrain the development of abuses that have become common in monopoly situations in post-independence Africa'.[44] It is not clear, however, what form such competition took and the article would have benefited from more discussion of patterns of competition and of lending, and the inclusion of fewer indigestible tables (of which there are 14).

Some of the best work in financial history concentrated on the City before 1914. Daunton, in a path-breaking piece, taps the riches of the Guildhall Library to examine how two families handled the ever present problem of the succession of the generations.[45] The skill with which this problem was tackled is crucial to any understanding of how mercantile dynasties emerged and perpetuated themselves. Daunton takes Lisle-Williams to task for failing to explain the emergence of mercantile dynasties and, in particular, for underestimating the difficulties involved in handling the succession problem. In this case two well-chosen examples are used to illuminate matters. The Hubbard and the Gibbs families enjoyed virtually identical social, political and economic positions and yet in the former case inadequate planning over inheritance and succession was instrumental in leading to the downfall of both family and firm. In the case of Gibbs a combination of careful planning, meritocracy and recruitment of non-family members, as well as diversification of the firm from guano into nitrates helped to ensure continued prosperity. The article makes a strong and persuasive case for not considering family and firm in isolation from one another.

Of those historians who have sought to clarify and enhance our understanding of the mechanism of investment before 1914, none has made a greater contribution during the last decade than Michie. In two essays published in 1988 he continues this work. The first essay examines one of a large number of marginal firms in the City, each of which sought to find a niche in a precarious and sometimes temporary corner of the market.[46] Dunn, Fischer & Co., a partnership of a Canadian and a Swiss Jew, were 'intermediaries between intermediaries' possessing no private clients of their own and only working through those that did. Until their world was shattered in 1914, their speciality, as 'wholesalers of securities', was in after market care: intervening and stabilising prices with a view to creating a market for any particular issue, and encouraging banks and secondary underwriters to make further loans and take subsequent issues. Michie reinforces the important point, made by Edelstein and others, that the precise volume of capital flowing from Britain before 1914 is almost impossible to calculate *directly*: much of the stock was often issued free and the bonds discounted, companies were registered abroad as well as in Britain, stockholders were resident throughout Britain, North America and Europe, and European banks often provided the loans on which of the securities were held. Michie estimates that there were some 40,000 separate firms in the City of London in the Edwardian period and so it would seem likely that there were many more firms like Dunn, Fischer. The more firms of this kind that existed, the more problematic estimates of capital outflow become. In his second essay, Michie compares the role of the London stock exchange with foreign bourses between 1850 and 1914,[47] and in so doing adds a continental European angle to his recent work on the London and New York stock exchanges.[48] Analysing not only the different types of demand made on exchanges but also membership and legal environment, Michie makes a plea for historians to consider financial systems as a whole and not to regard them as synonymous with banking. One of his conclusions is that the long-standing reliance of German firms on bank credit was not so much a reflection of interventionist German banks, but rather of the fact that these firms 'were denied the ease of access to finance via security issues that their British counterparts enjoyed'.[49] Michie returns a favourable verdict on the responsiveness and competitiveness of the London Stock Exchange, but adds that two measures, one of 1909 which banned outside contracts by jobbers and another of 1912 which introduced fixed commission, created barriers which diminished the long term flexibility and cheapness of London.

If the last article anticipates the relative decline of the London exchange, a contribution from Kathleen Burk looks at the related and broader issue of Britain's decline in the financial sphere as seen through the records of the house of Morgan.[50] Burk identifies four periods in the early twentieth century when the British government was forced to turn to the United States for financial help in order to carry out its policies: the Boer War, First World War, and the return to and abandonment of the gold standard in 1925 and 1931 respectively. Even though the idea of the British government turning to the US for assistance was much resented in the City, the government really had no choice, especially during the First World War which (like the Boer War) turned out to be far longer and more expensive than anyone anticipated. Morgans became involved not merely for profit but also for prestige. Even when the United States entered the war in 1917 and lent directly to the British government, Britain still raised $800m through Morgans between 1917 and 1919. Burk brings out well the change in Britain's financial position in the early twentieth century and especially the loss of self-confidence in 1931. Morgans, it is contended, did not set special conditions for the British government over and above those required of any other client; indeed it demonstrated great flexibility in its dealings with London and especially with Montagu Norman.

Turning from banking and the City to the insurance industry, we are reminded that insurance has never attracted many historians, though in compensation much of the work done has been of high quality. The solitary article published in 1988 maintains this standard in Westall's shrewd and learned examination of the impact of motor insurance on competition in general insurance between 1920 and 1938.[51] The eightfold increase in net premium income from motor insurance in this period provided welcome relief from the reduction in fire and employers' liability insurance during the depression, but at the same time brought a flood of profit-depressing new entrants into the industry. Although many of these were dubious and/or frail, Westall makes the valuable observation that their presence should warn us not to overemphasise the inevitability of 'monopoly' or 'managerial' capitalism and that in insurance competitive forces have remained 'a potent force in business organisation'.

The economic role of solicitors and accountants did not produce any articles in 1988, though all those interested in accounting history generally will be grateful for Parker's magisterial eighty-page 'select' bibliography of recent scholarship in this slightly daunting field. [52] A second contribution of interest to business historians was Reid's scholarly comparative study of British and United States' case law in which the courts had to decide either to accept or reject accounting techniques for fixed assets in the formulation of legal regulations defining profits.[53] The crucial decision in Britain was *Lee vs. Neuchatel Asphalte Co.* in 1889 in which the court rejected fixed asset accounting conventions for the determination of profits in tax, dividend and other cases. The *Lee* decision was largely overturned by the 1980 Companies Act which vested in accountants new responsibilities for deciding whether the level of distributed company profits violate the capital maintenance provisions in that Act.

IV

The business history of transport, internal and overseas trade was quite strongly represented in 1988 with some particularly good studies of British mercantile enterprise in the Far East. In transport two complementary articles by Channon drew on his 1975 PhD thesis to examine the important Anglo-Scottish railway pooling agreement (1851–69) and its successor, the rates conference, as methods of stabilising profits and prices.[54] Such practices helped to prevent price wars, while the Railway Clearing House provided an efficient check on cheating members. The main problem was that agreements could be undermined by newcomers and this was quite likely since there were few legal obstacles to the opening of new routes. Indeed, the threat of state intervention forced railway leaders to think twice before entering into large-scale agreements, and companies instead tended to retreat into secret arrangements. In his second article, Channon makes more explicit comparisons between Britain and the United States with regard to railway competition, concluding that their search for stability led railway leaders in the US to start with informal co-operation before moving to pools and finally to large scale consolidation. In Britain, by contrast, stability was sought through a whole range of methods, none of them entirely successful, but the next logical step (large scale merger) was most unlikely to receive parliamentary approval and in fact parliament rejected a series of merger bills in the early 1870s. Not until the financial disasters of the First World War could the question of railway grouping hope to find its way on to the political agenda.[55]

If state intervention to veto mergers influenced patterns of competition between railway companies, it also influenced the economics of locomotive building. Historians have frequently drawn attention to the infinite variations in the design of pre-1914 locomotives and rolling stock, and the nineteenth century may justly be regarded as an 'engineer's paradise'. As Kirby suggests, however, one reason for this was the Victorian state's refusal to sanction large-scale amalgamations between railway companies and so the scope for technical economies, coordination and standardisation was perforce limited until the grouping of 1921.[56] The role of the state in transport development is again emphasised in Freda Harcourt's original study of oceanic mail contracts from 1830 to 1914.[57] The risk and expense involved in both the prime cost and subsequent maintenance and repair facilities for ships was so great that private capital would not have been forthcoming, thus necessitating state subsidies. Although the high cost of the contract system was increasingly questioned and improvements in technology made competition more feasible, Harcourt brings out well the extent to which large companies like P & O could force the government to climb down on the issue of competition and on the length and level of a subsidy. Contract negotiation was time-consuming, but the benefits to the state and the economy were that major shipping routes were captured earlier and retained for longer, shipbuilding and marine engine technology encouraged, trade expanded and the increasing need to 'fly the flag' in distant waters met more effectively than would otherwise have been the case.

The question of shipbuilding and marine engine technology is raised again by Robertson[58] who returns to a subject he first touched on more than a decade ago: an explanation of why Britain consistently launched a smaller tonnage of motor ships than its major shipbuilding competitors between the wars.[59] Coleman and Macleod's recent criticism of British shipbuilders for their reluctance to construct diesel powered ships, together with Henning and Trace's earlier strictures about the reluctance of British shipowners to order motor ships lead Robertson to reply that in the first place shipping companies *not* builders normally set down specifications and so if charges of conservatism are levelled at anyone it should be at the former rather than the latter. Secondly, motor ships were far more suitable for very long routes than shorter ones, and, finally, citing the example of the successful Liverpool firm of T. & J. Harrison which looked into the various possibilities of propulsion but opted for the most traditional (coal-fired), Robertson concludes that 'conservatism was not necessarily synonymous with inefficiency or lack of profit'. One transport entrepreneur who could not be accused of conservatism, other than in politics, was Bristol-based Sir George White whose career between 1874 and 1916 is the subject of an essay by Harvey and Press.[60] White's business interests spanned stockbroking, railways, tramways, motor buses and taxis and finally aeroplane manufacture. The article adds much to the entry on White in the *Dictionary of Business Biography*, and explains the value of White's partnership with James Clifton Robinson in promoting tramway schemes and the way in which the new vehicle works, built in 1913, was used for the low-cost repair of White's rolling stock and other vehicles. His 'crowning achievement' was the creation of the Bristol & Colonial Aeroplane Co. in 1910, where employment had already risen to 550 by 1916, the year of his death.

On British overseas trade, most of the work in 1988, apart from the study of a Scot who migrated to Sweden in the 1820s to found a successful mercantile company,[61] dealt in one way or another with the Far East. Munro provided another taster of his forthcoming biography of Sir William Mackinnon by explaining why the Mackinnon group, the forerunner of the Inchcape group, gradually abandoned its original Clydeside base and (like some other important Scottish firms) moved south, in this case to London.[62] Though factors such as the failure of the City of Glasgow Bank in 1878 and the rumours that circulated about Mackinnon's connections with it had some bearing on the decision to move, the opening of the Suez Canal (1869) made London a more effective and profitable base. 'Pull' rather than 'push' factors thus determined the move.

The marketing efforts of British industry overseas have come under increasing scrutiny in recent years, especially following the publication in 1984 of Nicholas's stout defence of those efforts.[63] Since then conflicting evidence, through case studies, has accumulated.[64] Some support for Nicholas comes from Jenkins in a paper on the response of European wool traders to the opening up of the Japanese market, a process that began in 1858 and accelerated from 1868.[65] Of 234 Western businesses established in Tokyo by 1888, 103 were British, only 31 German, and there is no evidence that British marketing performance was poor. Indeed, Jenkins emphasises that because of the high degree of specialisation amongst wool textile manufacturers no single country dominated the Japanese market. As a consequence it is changing patterns of demand and the ability of indigenous Japanese firms to meet that demand that is likely to be of more significance in explaining the different performances of European wool textile producing countries. In fact, with only a very few exceptions, the British wool textile industry maintained its position very successfully against foreign competition before 1914. On the more general issue of textile marketing in East Asia before 1914, Sugiyama broadens the debate by considering not just the efforts of British firms but also the kind of commercial, credit and distribution networks that existed in China and Japan and how those networks worked against import penetration from Europe.[66] The author does find British marketing efforts wanting and suggests too an inability to adapt to fluctuations in demand, especially a conservatism in pattern design, but the main reason for the limited British impact lay in the treaty port system itself. As long as western firms were happy to remain dependent on indigenous merchants, new trading and distribution networks could not be established. Japan, on the other hand, which was much more aggressive and flexible in its relations with indigenous merchants, offering better terms than its western competitors, was more sensitive to market demands and would take Chinese goods in return for cotton products. Japanese firms thus opened up the Chinese market in a way that British firms could not. Sugiyama briefly examines the role of the agency houses, on which British firms largely depended, and judges them to have been 'inflexible'.

A rather different verdict on agency houses is returned by Chapman in his study of their function in the Far East (mainly India) in the century or so before 1920.[67] Chapman sketches the evolution of British mercantile enterprise from commission houses to agency houses then to managing agencies, where agency houses established companies to secure control of local business and property, and finally to investment groups. He presents a strong defence of the agency house system against large numbers of critics, and claims, though records are patchy, that their main contribution was the active construction of a modern industrial base in India and the provision of the necessary capital, management and marketing expertise. Chapman estimates that the whole of British trade with the Far East in 1914 was in the hands of twenty firms. Though his verdict is indeed favourable, Chapman rightly points to the failure of British and Indian enterprises to 'unite' to any noticeable extent, and that in the long term this may be seen as a failure in the agency house system.

In contrast with the interest shown in the history of British mercantile enterprise overseas, the domestic marketing efforts of British firms produced few publications in 1988. The only article dealing with advertising was that by Corley contrasting Britain and America in the nineteenth and early twentieth centuries.[68] Corley is at his best when drawing on his own work on patent medicines, but seems unaware of some good recent and relevant research. Thus he claims that the marketing of goods in the industrial revolution still remains to be 'systematically investigated', but overlooks important contributions from writers such as S. R. H. Jones and Lorna Weatherill for the pre-1850 period, and ignores Fraser's excellent survey on *The Coming of the Mass Market, 1850–1914*.[69] Corley's references notwithstanding, we have moved on a little since Clapham and Gilboy.

V

Articles on employers' organisations, labour policies and business education produced some unusual and some outstanding work concentrating, not surprisingly, on the century since the 1880s. In a useful study of 'corporatism in historical perspective', Gerber looks at the effects of the First World War on labour relations in Britain and the United States.[70] Reminding us of the very different degrees of unionisation in the two countries on the eve of the war, Gerber confirms the exceptional popular appeal of Whitleyism; so popular in fact that even Allan Smith of the Engineering Employers Federation publicly (but not of course in private) supported it, though any expectation of a new dawn in industrial relations proved illusory. Gerber neatly summarises the increasing hostility to organised labour in both Britain and the US. He points out that, although unions remained much stronger in Britain, the percentage drop in union membership in Britain in the decade after the war was much greater, though given the different experience of the two economies in the 1920s this should not surprise us. This article deals with how Lloyd George tried to defuse labour militancy in the immediate post-1918 period, and McIvor deals with the same problem from a different angle in his study of the Economic League between 1919 and 1939.[71] Well organised, wealthy and energetic, the League was launched on the initiative of, *inter alia,* mining, shipping and engineering employers (Allan Smith again). In addition to its role as a systematic blacklisting and monitoring agency, the League aimed to demonstrate to the labour force that class conflict was both avoidable and self-defeating ('Class warfare is ass warfare', to use a phrase from a League pamphlet of 1927). Following the failure of two minority Labour governments, and the demonstrable economic orthodoxy of those governments, the perceived threat from 'socialism' declined and the League concentrated its efforts on anti-communism. The League's most active branch was in Lancashire and Cheshire where it provided confidential information to large employers in the area, including A. V. Roe, Fairey Aviation, Metropolitan Vickers and Ferranti. McIvor's conclusion is that the League's nationwide blacklisting service was especially important in a period of extensive labour migration from depressed to relatively prosperous areas, though by keeping Communist Party members out of work the League may have increased the influence of Party members amongst the unemployed at local level.

The social politics of employers' organisations between the wars are examined in a deeply researched and impressive study by Rodgers who focuses on the National Confederation of Employers' Organisations (NCEO), a group dominated by some of the most active employers in the Economic League, including those from shipping, mining and engineering (Allan Smith yet again).[72] The hard line NCEO was the most conservative, anti-union and anti-socialist of all employer groups, and viewed the business difficulties of the 1920s almost entirely in terms of excessive labour and social welfare costs. Rodgers convincingly argues that the NCEO showed little similarity with the more consensus elements in other employer groups such as the Federation of British Industries and the smaller National Union of Manufacturers. It did, however, educate politicians and academics to think about the alleged relationship between labour costs, the extent of social welfare, and the problem of British competitiveness. Finally, Rodgers criticises the Middlemas thesis of corporate bias for its failure to appreciate the diverse social geography, attitudes and priorities of employer's organisations, and its 'almost quietist' perception of employer groups. The NCEO disliked government in general and high politics in particular.

Different aspects of company attitudes to labour are examined in three articles; two of which serve as welcome correctives to received opinion. Rowlinson's study of the application of scientific management at Cadbury's suggests there was rather more to management thinking than enlightened entrepreneurship and Quaker paternalism.[73] More attention should be paid to organisational developments, especially labour organisation and payment systems, introduced along with its well known welfare schemes. He makes the point that Cadbury's introduced a rigorous and sophisticated selection procedure with a view to increasing efficiency, and this included, for example, not employing married women at Bourneville. The firm was able to introduce scientific management without conflict because welfare and personnel policies designed to secure worker loyalty were already in place.

Employers' perceptions on how best to achieve loyalty and efficiency is a theme which also runs through Matthews' paper on profit-sharing in the gas industry.[74] Beginning with the evolution of the profit-sharing scheme at the South Metropolitan Gas Co., he offers a reasoned critique of Melling's article published in *Business History* a decade ago,[75] and argues that the scheme was in fact an example of 'unvarnished paternalism', and that the company remained vehemently anti-union until nationalisation. Profit-sharing was originally seen by South Metropolitan's chairman, George Livesey (an activist in the Free Labour movement of the 1890s), as a measure to 'retain or obtain the allegiance of working men'. Inherent in various schemes was the gospel of hard work, higher profits and property ownership, thus serving as a defence against municipalisation. In the gas industry generally, however, the schemes had only limited success: the industry was not particularly strike-prone, cash bonuses were too small to affect motivation, and shares which workers could not sell were seen as dead money. From the start the schemes were merely attempts to control the workforce and cannot be regarded as enlightened examples of industrial democracy.

The advent of new unionism was a powerful influence on the introduction of profit sharing schemes in the normally-quiescent gas industry. Labour disputes on the railways were not only more serious but also provoked different responses. Crompton examines the railway companies' attempts to overcome one of their greatest ever short term problems: how to recruit volunteer labour during the General Strike.[76] In so doing, he provides useful data on the impact of the strike on the LMSR, LNER, and GWR, and on the sources of volunteer labour, which included previously sacked employees, including drunkards and thieves There is clear evidence that absolute loyalty was demanded of senior staff, and those refusing to undertake other (i.e. strikers') duties might well be sacked. The emergency service run by the companies during the strike was however very limited and of more psychological than economic importance.

Also on labour there is the most unusual study by Green of the distance tailoring workers travelled to their place of employment, Henry Poole & Co., bespoke tailors in the West End of London.[77] High earnings and status together with stable employment meant that labour turnover was low, and in the second half of the nineteenth century the average distance travelled by Poole's employees doubled from two to four kilometres. The significance of these facts is revealed towards the end of this paper when Green relates the pattern of migration, from the centre of London to the suburbs, to the ideas of Standish Meacham and Gareth Stedman Jones. The latter in particular has argued that the migration of skilled workers to scattered suburbs undermined close relationships between work and home, thereby attenuating a militant political culture centred on the workplace. This in turn led to the political acquiescence of the capital's working class in the late nineteenth century, deriving from a 'conservative culture of consolation centred on the music hall and the privacy of family life'.[78]

Moving from the particular to the extremely wide-ranging, Howard Gospel considers the management of labour in Britain, the US and Japan.[79] Gospel is another business historian who explicitly and helpfully considers the problems of a comparative methodology, and gives fair warning that unless we construct a framework of questions and analysis 'we are in danger of merely setting foreign systems side by side and describing them'.[80] Drawing inspiration from Chandler, Gospel acknowledges that facets of labour management can be explained by corporate structure, and labour management strategies with reference to internal and external labour markets. Some might feel that Gospel's paper is simply too short to do justice to his themes, but nonetheless he does make some useful comparisons. The vast majority of British firms chose, with good reason, to externalise their labour relations (broadly defined). Only a few exceptionally large firms had either the incentive or ability to internalise recruitment, training and benefit systems.

In analyses of secular economic decline, the provision of education, whether secondary, non-advanced technical or higher, usually occupies a prominent place. The historian who has done most to deepen our understanding of the relationship between education and economic performance in Britain is Sanderson, and his two contributions in 1988 offer cogent surveys of different aspects of the debate. In the first he suggests that despite great improvements in technical education in the period 1870–1914, there was a demonstrable lack of enthusiasm for it on the part of employers, the 'upper classes' and trade unions.[81] In the long run, however, Sanderson considers that excessive research on the 1870–1914 period has tended to divert our attention from the twentieth century. He concludes that from an economic viewpoint Britain's greatest single educational mistake during this century was the failure to develop junior technical and continuation schools. He also defends the recent record of the public schools and applauds their shift to science and business subjects, believing that those who cite their pre–1914 curricula as evidence of chronic anti-industrialism ignore this important shift. A valuable feature of this paper is its comparative perspective, and perhaps above all how contrasting attitudes towards Germany before and after the First World War helped to determine the extent and character of technical education in Britain.

Sanderson's main target in his second article is Wiener for his virtual equation of the English university system with Oxford and Cambridge, thus ignoring the role of the civic universities in sustaining the 'industrial spirit'.[82] The article reminds us that many of the civics were founded by industrialists, that they had close association with industrial research, and that several of them were explicit about their industrial aims. Indeed, the relationships between technology departments at the civics and industrial firms in the period 1880 and 1914 were closer than before or since. Though Sanderson is concerned with the period before the First World War, he takes the opportunity (rather unfairly) to chastise Wiener who 'directly or indirectly, consciously or unconsciously' has helped to create a contemporary political climate in which people who are ignorant of the history of the civic universities, and fail to appreciate their role, can impose real cuts in their funding.

The final piece on education, again related to economic performance, is a broad sweep by Locke comparing traditions in higher education and the place of business studies in France, Germany and Britain.[83] This article is really a link between Locke's earlier book, *The End of the Practical Man*, and his next one which will examine American and Japanese influences on business studies in France, Britain and West Germany. His sound advice is that a comparative approach is a prerequisite for an assessment of the 'educational factor'. Locke exposes many of the key differences between the three countries which persisted at least until the mid-1960s, since when the content of management studies courses has tended to converge. Until then, economics in Britain tended towards the pure rather than the applied, neither the civil service nor industry employed economists in any numbers, nor did they put pressure on the universities to produce graduates with expertise in econometrics or statistics. Above all, there was in Britain no 'wissenschaft' tradition as in Germany, nor was there a mathematically literate engineering élite as in France. Locke concludes by stressing the need for research into comparative business cultures as an aid to the resolution of contemporary managerial problems which themselves have cultural origins.

VI

The spread of British multinationals overseas, and the role of multinationals in Britain, produced three fine survey articles in 1988. Mira

Wilkins, the world's leading authority on the development of multinationals, in the first of two papers, focuses on the 'ignored or misunderstood' free standing company (FSC).[84] The FSC, though not unique to Britain was more common there than elsewhere, and was perhaps the most frequent mode of British direct investment abroad before 1914. There were 2,000 of them on the eve of the First World War. Firms as different as Burmah Oil and the Imperial Bank of Persia started life as FSCs. In origin they were administratively and legally independent of a British parent company engaged in the same industry at home, and obtained capital by persuading British investors to put their money into actually, or potentially, profitable operations overseas. A meagre administrative structure distinguished British FSCs from early US multinationals and, unlike the latter, they had no company-specific expertise on which they could depend. The limited administrative structure was not always fully appreciated by investors, and it was a major factor in the high mortality rate of FSCs. Ultimately FSCs were forced to create appropriate management organisations in countries such as Burma and Spain where local management was lacking, but elsewhere there was no advantage in establishing or providing such organisations.

In her second paper, Wilkins provides an outstanding survey of European and US multinationals in their 'initial era', 1870–1914.[85] This is vintage Wilkins: massive scholarship and erudition which enable her to answer key questions and map out the agenda for future research. Factor costs are not enough to explain observed differences between and among multinationals from different countries and need to be considered in conjunction with other economic, demographic, social and political factors. Initially reluctant to examine such an 'amorphous concept' as culture, Wilkins' reluctance declines later in the essay in a way that Robert Locke would no doubt approve. Whereas German and US business abroad complemented that at home, some British business activity abroad involved a deliberate switch of certain resources from domestic to international use. Little of British overseas business involved firms based on advanced technology; more typically trademarked consumer products dominated. Finally, whereas US multinationals moved first into geographically proximate or culturally similar areas, British multinationals tended to prefer the linguistically and politically (i.e. imperial) 'nearby'.

Foreign multinational activity in Britain began in the second half of the nineteenth century and has of course increased enormously since 1945, with 402 of Britain's largest corporations being foreign owned in 1980. Geoffrey Jones carefully analyses a 'respectable if not perfect' sample of 125 initial investments of foreign companies which either established themselves or acquired manufacturing capability in Britain before 1945.[86] Most foreign investment in Britain was not in labour intensive industry, but rather in electrical engineering, other electrical products, motor vehicles, chemicals and diverse consumer goods. Jones marshals his evidence to deny any general hypothesis of entrepreneurial/managerial failure in all sectors of British industry. In particular, where British firms possessed 'appropriate' managerial structures and technologies (as in rayon), the impact of foreign multinational enterprise in Britain was small. His verdict on the latter is favourable: creating employment, perhaps improving labour management practices, introducing new technologies, products and marketing methods, and generally presenting a challenge to British business and forcing it to respond with 'renewed vitality.'

The issue of how and why British firms expanded overseas, or foreign firms established themselves in Britain, is of course part of one of the most fundamental questions in business history: how and why any firm grows. The modern world, it is almost superfluous to note, is dominated by large, multinational, multiproduct, multifunctional, multidivisional and multiplant firms, and yet business historians have tended to lag behind the economists in incorporating recent developments in the theory of the firm. Hutchinson and Nicholas point out, however, that the growth of large, vertically integrated enterprises was not achieved by an abrupt shift from the market to the firm, and argue the case for explicit recognition by business historians of a range of intermediate modes which were neither arm's length markets nor hierarchical firms.[87] Intermediate arrangements made by firms to reduce transactions costs should be viewed as 'pre-vertical integration stages' in the growth of firms and include agencies, franchises and licenses, depots and branch offices. As far as British firms were concerned, such arrangements were far more common, and developed earlier than some business historians (even Chandler) have generally accepted. Hutchinson and Nicholas call for more comparative studies which would contrast industries utilising intermediate arrangements between independent firms, with those industries in which vertical integration was typified by takeover of sequential distribution channels by manufacturers.

Throughout this review we have stressed the emphasis given to comparative research in the periodical literature of 1988. All the signs are that this trend will intensify. If it is still too early to proclaim the end of insularity, we have at least witnessed the beginning of the end.

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NOTES

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REVIEW ARTICLE

TRADE, FINANCE AND DIPLOMACY: THE NEW WORLD AND THE OLD IN THE TWENTIETH CENTURY

FRANK COSTIGLIOLA, *Awkward Dominion; American Political, Economic, and Cultural Relations with Europe, 1919–1933* (London: Cornell University Press, 1984. Pp.379. £29.95).

DAVID A. LAKE, *Power, Protection, and Free Trade: International Sources of US Commercial Strategy, 1887–1939* (London: Cornell University Press, 1988. Pp.xi+242. £29.95).

ALAN P. DOBSON, *The Politics of the Anglo-American Special Economic Relationship* (Brighton: Wheatsheaf Books, 1988. Pp.xii+290. £29.95).

One of the outstanding features of the twentieth century is the economic power of the United States. During the late nineteenth century the new world had already outstripped Britain as the leading manufacturing nation, a position made even more dominant by expansion during the First World War. This conflict also transformed America from net debtor status to a new role as the world's major creditor nation; she had clearly moved into Britain's place.[1] During the postwar period, Washington was reluctant to use its great powers directly in order to assist Europe's recovery. In contrast, after 1945, a vigorous interventionist America emerged, eagerly playing the role of an international political and economic policeman. As Britain gradually withdrew from her costly overseas commitments and moved closer to Europe during the 1960s, the US economy came under great strain. By 1985, America had become once again a net debtor; moreover, an adverse balance of payments, a huge federal budget deficit and relatively low productivity levels presented a picture scarcely imaginable 40 years earlier. Whether in ascent or relative decline, however, the American economy is central to the modern history of advanced industrial nations.

Frank Costigliola has produced a coherent study of international economic relations between the United States and Europe during the years from the end of the Great War to the depths of the depression in 1933. This period has attracted the attention of several scholars whose contribution to our understanding of these turbulent times has been sufficiently radical for their findings to be acclaimed as the 'new international history'.[2] Costigliola fits neatly into this *genre* which is characterised by extensive primary research and a fascination with the world after Versailles. The practitioners of the 'new international history' eschew the rigid divisions into which many previous scholars divided their studies. Recognising the interdependence between financial, economic, military, diplomatic and political forces their analyses strive not only for integration but also for an eradication of national bias.

There is currently a challenging stress on the basic contradictions which bedevilled the post-1918 international economy.[3] The crux of the problem lay in the complex debt structure which was created by the First World War. Germany was compelled to pay reparations; the US did not press for reparations but insisted that the Allies repay their formidable war debts. If Germany was to pay reparations in full she had to be economically strong, yet there was a natural fear, especially in France, that she would eventually become a military threat. Germany resented reparations, believed them to be economically harmful and hoped for renegotiation of the burden. Could the democratic Weimar government, which the Allies wanted to survive, ignore the wishes of an electorate which believed that reparations were unjust? Could a French government accept a significant reduction in reparations and avoid national disgrace? Could the United States distance herself from Europe's financial problems?

Charles Maier has identified the 1920s as a period crucial to our understanding of the twentieth century, seeing in it, for example, not only the rise of corporate pluralism in Europe but also detecting parallels with the world after 1945.[4] The many attempts at international stabilisation after 1918, in which the US played a major role, achieved some success from the adoption of the Dawes Plan (1924) until the onset of the depression. These experiments eventually provided the rationale for the determined drive for equilibrium after World War II. The 1920s, therefore, was not merely a decade marking time until the depression and an inevitable war destroyed Versailles; its fascination, however, can only be appreciated by multi-country studies.

The close economic cooperation displayed by the Allied powers during the war soon evaporated after the armistice. In 1916, at the Paris Economic Conference, the French had argued for retention of government control and regulation once hostilities ceased.[5] President Wilson was, however, in favour of a return to normal peacetime conditions with all possible speed; the dismantling of economic controls was therefore undertaken with great rapidity. America saw private enterprise as the key to the economic revival of Europe and the guarantor of its stability. However, the informal cooperation between government and business, which had been evident before 1914, was to continue. Thus the US sought to avoid both the ideologically unacceptable state capitalism and *laisser-faire* which, in a troubled world, left too much to chance.

Once Allied economic cooperation was rejected as a means of securing postwar recovery and the private sector selected as the vehicle for growth, it was necessary to create the conditions in which business could flourish. A return to stability was essential. But what sort of Europe did the principal participants at Versailles desire? France, whose early advocacy of collective planning agreements had been met with a blunt American refusal, was the most apprehensive of an economic revival in Germany, although it is wrong to see France as determined to crush Germany and anxious to extract maximum reparations whatever the cost.[6] Britain initially adopted a tough stance on reparations, but by 1920 had assumed a more conciliatory posture. Anxious to return to the trade patterns which existed before 1914, Britain wanted an economically strong Germany, but not one which was able to pay reparations only by deflating the domestic economy in order to make exports more competitive. Such a strategy would seriously affect Britain's attempt to expand overseas trade. Less threatened by Germany militarily than was France, London believed that stability in central Europe was essential for continued peace.

As Costigliola records, the US was in favour of a moderate reparations settlement; indeed Germany was accorded a high level of importance in America's vision of the new Europe. Before President Wilson had left office, national policy had changed from one which emphasised political and military matters to reliance upon unofficial rather than official economic and cultural initiatives. Irritated by European bickering, the US wanted to see reparations recognised as a business rather than a political issue. Although Washington saw a need to assist

Europe, there was no support from the American public, or from Congress, for doing this at the expense of the domestic taxpayer.

Costigliola also emphasises the impact of US culture on Europe so that political and economic relations can be judged in context. During the postwar years, Europeans were fascinated by things American. A high standard of living, confidence, optimism, full employment, and social and political cohesion seemed to be the preserve of the new world. Technological advances and new business methods, together with a mass market dependent upon high wages, had created society which seemed destined to inexorably accumulate wealth. If only Europe could emulate the exuberance and industrial efficiency of her transatlantic ally, so many thought, war debts and reparations could easily be paid. Some political leaders had become so concerned about the economic power of the United States that it was suggested that the formation of a united states of Europe was the only way to resist it.[7]

During the early 1920s the key to European stability was Germany where mounting inflation, which the Allies believed was fuelled by financial profligacy, caused grave concern. The Germans, however, saw reparations as the root cause of inflation and therefore needed some concessions from Britain and France if an orthodox fiscal policy was to be adopted. American policy was to encourage flexibility on the part of Europeans over reparations but only she was sufficiently powerful to negotiate a new financial truce.[8]

The Dawes Plan seemed a triumph for private American intervention. Such was the confidence of US investors in Germany, once their bankers had given that country their stamp of approval, that the bonds floated for the Dawes loan were oversubscribed ten times. Moreover, flows of cheap American money enabled the German people, quite contrary to the wishes of the Allies in 1918, to increase their living standards with rapidity. Indeed, by 1930 US private bankers had lent nearly $3 billion to German borrowers.[9] America was deeply involved in German financial affairs; business and banks could see the connection between reparations and war debts even though Washington refused officially to recognise such a relationship.

Costigliola believes that during the last few years of the 1920s America tried to stabilise Europe through the encouragement of peaceful change and economic growth. Whilst pursuing these policies, however, the US failed to see the fundamental flaws in the international economic system which it had played such a significant part in creating. The US did not force sound economic policies upon the Weimar government because it did not want to become directly involved; instead bankers, who were not interested in policy but in money, oversaw capital flows. Unfortunately, Germany's economic policies did not create the infrastructure required for sustained growth in the domestic economy.

Although reparations payments were small during the 1920s, they were significant, and fears that payments would be a continuing burden could well have affected investment decisions.[10] There is little doubt, however, that Germany could have paid more if payment had been a priority.[11] The psychological effects of Versailles, of course, defy quantification, but the latest investigation on this perennial problem claims that Germany's economic difficulties between 1924 and 1929 were not a result of reparations but came from her failure to readjust to postwar problems.[12] Moreover, Germany gained greatly from a massive transfer of wealth as American loans, which were not repaid, flooded in. Americans did not appreciate the risks involved in lending to Germany[13] although many well informed observers had been apprehensive as early as 1925.

Once the depression broke, the liberal international economy which the US had helped to create was no longer sustainable. Lack of American money and a steep decline in world trade made it impossible for Germany and other debtors to continue repayment. American foreign economic policies were only effective when Germany was prosperous.[14] Defaults in international loans,[15] the erection of tariff barriers and, in 1931, the departure of sterling from the gold standard, fragmented the world economy. The world's leading debtor and its leading creditor were locked in a vicious spiral of deflation. American bankers and business men were discredited: the vision of growth, stability and full employment which the new world had inspired was shattered. The bitterness which followed the financial crisis of 1931 cooled relationships between Britain, the United States and France.[16]

Costigliola has compressed a great deal of information into a relatively short book. His research is impressive and his style readable. The US did not turn its back on Europe after 1918 but wished to impose peace and economic harmony on the old world. Was this unofficial approach a sophisticated and imaginative strategy, as Costigliola suggests, in spite of the swift collapse of stability after 1929? America had formidable powers after Versailles; were they used wisely? Although Costigliola praises the dexterity with which US policies were packaged for public acceptance and the negotiating skills of bankers and corporate leaders, one cannot escape the conclusion that the search for power with minimum responsibility lacked reality. Excessive dependence upon the private sector created a structure which could not withstand a major crisis. Had the many private doubts been translated into public policy during the 1920s, the edifice would have been stronger, but even then perhaps not powerful enough to withstand the depression.

Costigliola's emphasis on the American cultural invasion of Europe is a stimulating thesis, but somewhat exaggerated. How deep a cultural impact can we expect in such a short time? Moreover, as Maier points out, the rationalisation which took place in Europe deviated from the American model. In the old world rationalisation was often merely a device to lower costs and to overcome the threat of saturated markets.[17] Nor is it correct to see the 1920s as an era of American dominion. The economic, diplomatic and political structure of the postwar world owed a great deal to the US, but cannot be judged exclusively as an exercise in American sovereignty. Finally, Costigliola is guilty of over-simplifying the reparations issue when he describes it as a device to weaken Germany. Modern scholars have, for example, presented the French position on this issue in a way which arouses sympathy even amongst some Anglo-Saxons. These criticisms, however, must be set against the difficulties of producing good comparative history and the contribution which this book has made to the continuing debate on the 1920s.

Between 1880 and 1940 the structure of the international economy changed radically, as did the role which the US played in it. The last decade of the nineteenth century saw America emerge as the world's major manufacturing nation and by 1913 she accounted for one-third of global industrial output. This transformation led to a change in the composition of US exports from a dependence upon foodstuffs and raw materials to one where, on the eve of World War I, non-food manufactures had achieved a new pre-eminence. The war and postwar decade saw American manufacturing consolidate its position, but the 1930s depression led to a decline in international trade from which America was not immune.

The US economy was radically different from that of Great Britain, the world's pre-eminent trading nation. The former nation possessed a large domestic market, an agricultural sector which produced a surplus for export and an economy less dependent upon foreign trade than the latter. Moreover, the American system of government enabled strong pressure groups to exert an influence on the formulation of tariff policy. Whereas Britain had become, unilaterally, a free trade nation in the middle of the nineteenth century, US industry was heavily protected. By the 1930s, however, British hegemony had been fractured and the bastion of free trade had succumbed to tariff protection.

David Lake has constructed a systematic theory which attempts to explain the evolution of US trade preferences during the period 1887–1939. Alternative models which emphasise hegemonic stability or interest group theory are found wanting because, firstly, they fail to account for cooperation and conflict in non-hegemonic systems or, secondly, they do not explain why party political fluctuations fail to mirror tariff movements. Lake favours a theoretical framework which not only takes account of domestic political pressures but also gives prominence to the reaction by America to the constraints and the opportunities of the international economic structure. Particular importance is given to the role of the foreign policy executive, the vehicle for transforming constraints and opportunity into policy. The foreign policy executive's interest in national power was sometimes in conflict with the predelictions of the elected representatives of the state. Political skill, however, enabled key individuals to play a significant role in the formulation of policies, thus ensuring that domestic political pressures alone cannot fully explain the shaping of foreign economic policy.

The first part of this book examines the domestic political process through which the structure of international trade influences domestic strategy. In the second the author's theory is tested by an analysis of four phases of US trade strategy: 1887–97; 1898–1912, 1912–1930 and 1930–37. The period 1887–97, for example, saw tariff changes, influenced by the foreign policy executive, which moved America from a purely protective stance to one which encouraged trade with Latin America. During the nineteenth century the US knew that whatever action she took over tariffs would not lead to retaliation from Britain. She was, in Lake's words, a free rider on free trade.

The tariff which has received the most adverse comment, perhaps in the entire history of the US, was that proposed by the Hawley-Smoot bill in 1930. Its passage was quickly followed by a worsening of the depression and also by widespread retaliation. Lake explains Hawley-Smoot by the atmosphere of the time: economic uncertainty, a concern over the level of agricultural imports and a fear that foreigners were about to increase protection. Many supporters of this legislation saw tariffs solely as a domestic issue; they disregarded the possibility of retaliation and, as a result, one of the normal checks to increasing protection was significantly reduced. Hoover was the last president who could argue that tariff change was a wholly domestic policy.[18]

By 1934 the atmosphere in Washington and in the country had changed: exports had suffered a severe contraction and the retaliation which had followed Hawley-Smoot was, many believed, in part responsible for the disintegration of the economy. Moreover, Britain had formally abandoned free trade and had opted for Imperial Preference. The Reciprocal Trade Agreement Act (RTAA, 1934) heralded a move towards freer trade on the part of the US but, according to Lake, it cannot be seen as either an example of international leadership or a strategy designed to reinvigorate the world economy. The RTAA was merely a recognition that export markets could not be gained unless the US made some move towards tariff reduction. It was self-interest which persuaded the New Dealers to advocate more open trade.

Lake's exhaustive researches has produced an imaginative argument in which he rightly recognises that the structure of the international economy has influenced US trade strategy. Some of his views, however, are not just ingenious, they are also tortuous. For example, one of the periods chosen for analysis, 1912–30, began with a move towards more liberal trade under Woodrow Wilson which was dashed by war and the return of a Republican president. Lake, however, argues that the foreign economic policy pursued by Harding was liberal, active and coherent, quite contrary to most interest group theorists who see only confusion between Washingtons's drive for both tariff protection and export promotion.[19] Many contemporary public figures, it is true, had no difficulty in reconciling these activities. A group which included Herbert Hoover, believed that domestic protection was vital if high wage US workers were to compete against cheap labour imports, but since the world needed a buoyant US economy and tariffs were necessary to achieve this happy end their promotion was not inconsistent with trade expansion.[20]

Most contemporary economists (as can be seen from the protests against Hawley-Smoot) were opposed to protection and were adamant that tariff increases made exporting more difficult. The Fordney-McCumber tariff was passed in 1922 when the US was the world's leading creditor nation, had a large trade surplus and was in such a powerful position as a manufacturing nation that import penetration seems inconceivable.[21] Thus many Fordney-McCumber duties sought to protect industries which faced no threat; they were the product of ignorance, confusion and self-interest. Lake cleverly argues that neither Fordney-McCumber nor Hawley-Smoot were as protectionist as previously protrayed, but nevertheless it is difficult to see the unity within the period 1912–30 which he portrays. Perhaps too, all studies of foreign trade during this era should be obliged to include an analysis of the impact of immigration restriction which has both national and international ramifications in the short and the long run, as suggested by Brinley Thomas in his classic study of the Atlantic economy.[22]

The post-1945 era was one of relative stability; here was no repeat of the 1918–21 boom and bust, and no massive debt problem which had led to such financial distress during the interwar period. Another contrast can be seen in the role of the United States which, after a few years of hesitation, embarked upon a course of direct intervention in international affairs. Alan Dobson's book charts both the agreement and the conflict in the British-American economic special relationship since 1940. Yet is 1940 a good starting point for an analysis of the forces which governed economic and financial events involving both nations? Readers need to understand interwar experiences if they are to grasp fully the rationale of policies adopted during World War II and beyond. What did America and Britain learn from the tempestuous period between the wars? Were both postwar recoveries closely linked, as Maier suggests, or, more probably, was the latter a determined attempt to avoid the pitfalls of indebtedness and unemployment and also the destabilising nationalism which soured international relations during the 1920s and 1930s?[23]

The most fascinating period of economic diplomacy between Britain and America, and the one which has attracted most scholarly attention, lasted from 1940 until the early 1950s.[24] War brought both nations together economically and emotionally. Lend Lease, Roosevelt's lifeline to blitz-battered Britain, was vital to the war effort as it enabled the recipient to mobilise a higher proportion of national resources than would otherwise have been possible. There were, however, formidable costs as well as benefits in the Lend Lease arrangement; amongst them was Congressional determination to ensure that UK export industries were not subsidised. Therefore, payment was exacted for what it was believed Britain could afford and, as a result, London's reserves had been reduced to exceptionally low levels by 1945.

In contrast with the previous conflict, British and American experts met before the war was over to produce plans which would banish currency instability and make easier the implementation of countercyclical economic policies. However, America's natural hostility to imperialism and her desire not only to see tariffs reduced but also international trade discrimination cease, had limited appeal to British negotiators who believed their country's trading position was so precarious that controls must be retained. Washington's strategy, however, was clear: it was to foster the spread of American style capitalism and liberal trade. In addition, and not unlike attitudes during the 1920s, there was a determination to ensure the overseas sales of American goods.[25]

One advantage of World War II was that it destroyed the old economic order thus forcing the victorious powers to create a new structure. As Dobson shows, the debates, which culminated in the Bretton Woods agreement, over which form an International Clearing Union should take, saw the plans of Harry Dexter White triumph over those of Maynard Keynes. The White Plan relied upon contributions by member countries to a central fund rather than the provision of automatic credit facilities and the introduction of a new unit of currency which had been advocated by Keynes.[26] It is now clear that Congress failed to appreciate the massive economic distress in Europe and its reliance upon the Bretton Woods system – the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (World Bank) – as twin guarantors of postwar stability was based upon a simplistic understanding of current economic problems.[27]

The US was in an extraordinarily dominant position when the war ended; Europe, however, was, as she had been after 1918, desperately anxious to buy from the US but had little to sell her in return. The view from Washington was that the post-1945 dollar shortage would not last long and that after a short interlude the IMF would occupy the central position in a multilateral fully convertible payments system. Thus the Anglo-American Loan of 1945 obliged London to make sterling convertible with little delay. The disastrous experience with premature sterling convertibility in 1947 cruelly exposed the limitations of the British economy. It was time for direct intervention from Washington lest Europe's economy ran out of steam. After 1918 the answer to the dollar shortage was private investment; after 1947 federal funds were seen as the solution to a similar problem.

The aim of the European Recovery Programme, or Marshall Plan, was the political and economic reconstruction of Europe to enable the region to become a full, non-communist, participant in the new postwar international economy.[28] Its implementation was a recognition that the IMF lacked the resources to deal with reconstruction and that Britain was economically too weak to lead the way in Europe. Indeed, as Ryan suggests, the special relationship was a product of British weakness;[29] it certainly was never a partnership of equals. At very small cost to the US[30] (1.2 per cent of GNP for 1948–51) Europe's recovery was sustained and placed on a firm footing from which the economic miracles of the fifties and sixties could be launched. Those economies which grew fastest, a group which did not include Britain, also saw their exports expand rapidly. The growth of per capita income, therefore, was not checked by balance of payment constraints. While Britain participated in the European Recovery Programme she resisted all pressure from Washington to negotiate a single market agreement with her European neighbours. John Bull looked across the Atlantic and to the Commonwealth, not over the Channel. Even before the Marshall Plan had run its course, however, the American presence in Europe was firmly secured with the establishment of NATO, an organisation in whose formation Britain played a vital role.[31]

During the 1950s and 1960s the performance of the British economy was disappointing if compared with that of her European neighbours. Moreover, by the mid-1950s it was evident that sterling was in decline as a key currency. The Bretton Woods system seemed to be effective but only because the dollar, the central currency, was freely convertible into gold at a fixed price. Unfortunately the American economy could not match the economic progress of rapid growers such as Germany or Japan. From the late 1960s a worsening balance of payments deficit combined with inflation remorselessly eroded the economic power of the US. Manufacturing productivity slumped; in 1970 the US moved from surplus to deficit in the trade of manufactured goods, while German and Japanese surpluses grew substantially. The end of US hegemony was no longer a matter of conjecture. The Bretton Woods system, already under great strain since the devaluation of sterling in 1967, finally crumbled in 1972 from which point floating, not fixed, exchange rates have prevailed. The fall of the dollar symbolised America's economic decline.[32]

Neither the US nor the UK have been at the vanguard of economic progress in recent decades. Britain's presence east of Suez was progressively curtailed, in spite of American protests, as the need for public expenditure cuts became compelling. Perhaps as Mancur Olson suggests, World War II destroyed sclerotic, growth-retarding distributional coalitions in many continental European countries and in Japan, thus enabling them to experience economic miracles. The more stable, uninvaded British and American societies, united in stagnation, were left with their powerful trades unions and other special interest organisations which proved to be growth inhibitors.[33]

In a multilateral world it is often impossible or meaningless to attempt a separation in the economic relationships of two countries. Moreover, it is difficult to distinguish in the 'special relationship' whether cultural, political, defence or economic factors have played the crucial role. What seems clear for the period under review is that when it mattered London had to dance to Washington's tune, and the Suez crisis in 1956 showed that the UK was incapable of acting alone. Increasingly Japan and Germany came to occupy a more significant place in the economic firmament than did Britain. It has even been suggested, though the claim is a little far-fetched, that Germany also has a long-established 'special relationship' with the United States.[34] Certainly Japan will be examined more closely by President Bush's economists, during the 1990s, than will Britain.

Dobson has produced a sound survey of the economic relationship between Britain and the US, though at times his account of the political background is a little breathless. His book has the merit of covering more of the postwar years than most of the specialist monographs (though there is surprisingly little on the period after 1967) which concentrate on the period from the outbreak of war until the early 1950s. Indeed, the advantage of Dobson's work is that it provides information on a period of great economic and political complexity in an intelligible fashion. Unfortunately potentially interesting issues such as the break up of the Bretton Woods system or an analysis of the intellectual debt which British monetarists owe to their American counterparts are covered briefly, or not at all. In short, this book lacks the all-embracing authority of Costigliola's work, but it is still a useful introduction to an interesting, though now much-diminished, relationship.

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NOTES

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BOOK REVIEWS

KARL GUNNAR PERSSON, *Pre-Industrial Economic Growth: Social Organisation and Technological Progress in Europe* (Oxford: Basil Blackwell, 1988. Pp.159. £27.50).

This study is principally concerned with the evolution of agrarian technology and social structure in pre-industrial Western Europe. Persson rejects what he describes as the dominant 'stagnationist' view which contends that progress in pre-industrial agriculture was obstructed by the lack of investment and the failure of the appropriate institutions to stimulate and reward innovation. Instead, Persson argues that population growth induced endogenous technological change in agriculture, a progress which was much less costly and risky than normally thought. Thus farmers took advantage of 'random events' which spontaneously occurred in production and which showed the way to better methods, and they also raised productivity through learning by doing and much-enhanced regional specialisation. He develops a mathematical model which posits that these agrarian advances raised per capita incomes and hence increased the aggregate demand for urban goods. In turn, the consequent growth of the urban sector, where there were increasing returns to scale, led to a relative fall in the prices of manufactured goods, including those of capital goods, and hence to further and self-sustained growth in agriculture productivity and population.

This is a stimulating contribution to the thriving debate about the nature and causes of pre-industrial growth, and one which brings out, in a much more rigorous way than hitherto, the powerful agrarian implications of the growth of the non-agrarian sector. However, while the thesis is lucidly developed the evidence supporting it is not entirely convincing. First, the discussion of innovation is abstract. What exactly were the random mutations in technique which farmers adopted as best-practice methods? Persson never really tells us. Second, while Persson rightly draws our attention to the existence of areas of progressive farming in medieval Europe, he exaggerates their contribution to overall progress. For example, the work cited on England by Bruce Campbell and others has so far shown that the areas of advanced techniques were very limited in extent. Finally, his estimates of aggregate productivity levels in Western Europe in 1100–1300 and in England from 1500–1800, which show a continuous and accelerating rate of productivity gains, are inevitably based on fragile quantitative assumptions. His figures for the 1100–1300 period, for instance, almost certainly overestimate the relative growth of the urban sector. Persson's model also leads us away from the fruitful comparative approach re-invigorated in the recent 'Brenner Debate'. Certainly, much of the history of European agriculture suggests that the agrarian response to population growth was very weak; as seen, for example, in the crisis of decreasing returns and disinvestment which affected seventeenth-century Spain and many parts of France and Italy. Indeed, it would appear that the continuum of English agrarian progress, which provides Persson with much of his evidence, was a special rather than a typical case. Even here, the recent historiography has stressed that English progress in the pre-industrial period was fastest between 1650 and 1750, when population growth was at its slowest and most discontinuous.

I have concentrated on the main thrust of Person's argument. But business historians may also be attracted to his analyses of the open-field and gild systems which provide penetrating and fresh interpretations of these much-studied institutions. However, his argument that population growth brought about the beneficial decline of manorial institutions presents a familiar but unconvincing story. It may be true that the pre-plague period saw a change in the form of feudal rent but English feudalism atrophied in a post-plague context of falling population; and there is an abundance of Eastern European evidence to demonstrate that population growth could equally well lead to the reconstruction of the manorial economy. Persson has presented a thought-provoking critique of the Malthusian-Ricardian thesis of technological stagnation in pre-industrial agriculture. However, his model does not allow for the diversity of agrarian experience which, having its roots in divergent socio-political developments, cannot be accounted for by the *deus ex machina* of population growth.

University of Manchester R.C. NASH

JORDAN GOODMAN and KATRINA HONEYMAN, *Gainful Pursuits: The Making of Industrial Europe, 1600–1914* (London: Edward Arnold, 1988. Pp.262. £34.95; pb. £19.95).

Gainful Pursuits is a refreshing, up-to-date synthesis of recent scholarship on the relationships between the emergence of European industries and other economic activities in the long term. Goodman and Honeyman argue that industrialisation in Europe should be understood as an evolving process of change and continuity over several centuries, rather than one of discontinuity, and that the process was a far more complex and protracted one in terms of the functional relationships between industry and other forms of economic activity than is generally perceived. In their approach they reject the use of geographical boundaries and political units and develop a thematic analysis related to recent issues of debate concerning the interconnections between the agrarian, commercial, financial and industrial sectors of the European economy. They lay stress also on the need to appreciate the diversity of the patterns of industrial emergence within the overall process.

They divide their study into four sections. The first, subtitled 'The Structural Context', considers the changing role of industry within the European economy and the implications for links with the world economy. They indicate the extent to which European industry had already developed by the seventeenth century and was attracting capital and labour away from agriculture, but question whether agriculture really had a significant, dynamic role in that development. They suggest that, although one cannot disregard the consequences of agricultural changes, the agricultural sector was primarily a 'nuisance' for the making of industrial Europe and that emphases on positive relationships are misplaced. They question the relevance of distinctions between rural and urban industry and argue that rural industry was much more closely related to an urban industrial and commercial base than to the nature of, and change in, agricultural activity. They see industrial emergence as a process of disengagement from agriculture and of development of functional links with the commercial system.

The paths this process took are examined in Part Two, 'The Internal Dynamics'. They review the now quite well rehearsed evidence for the variety of work organisations that were involved and that persisted in industrial expansion, stressing the interdependent range of production methods, the existence of several equally valid and viable routes to industrial expansion and the vitality of those different methods and routes. The explanations that they perceive as particularly relevant for the diversity of the process are the enduring of manufacturing production in the countryside not as a gradually outmoded remnant of industrial activity but as a logical solution to problems in both town and countryside with its own dynamism and durability. Secondly they indicate the appropriateness of artisanal and craft workshops and rightly argue that there was no necessarily linear progression in the emergence of industrial forms. Decentralisation occurred as well as centralisation. Thirdly they see organisational forms being dependent not so much on relative efficiencies or changes in relative production and transaction costs, but on distributions of power in production, between capital and labour, men and women, skilled and unskilled. These themes and the question of the role of technology are further considered in Part Three in the context of a range of industrial studies, and the arguments are drawn together in the concluding section where the protracted, continuous and diverse nature of the industrialisation process is further stressed. As a result they eschew notions of preconditions and hierarchies.

The arguments and analysis are stimulating and thought provoking. The melding of a significant range of reinterpretations to provide this new overview of European industrialisation is a valuable although somewhat disconcerting exercise. The emphasis on the homogeneity of the process overall and the range and rationality of the alternative routes lead Goodman and Honeyman to interpret the process as not having winners or losers. Yet ultimately were there not winners and were there not losers? Some forms of industrial organisation transcended others. Industry became more regionalised and more nationally based. In individual industries dominant forms of organisation did emerge. It surely follows that some contributions to the process were transient and some were ultimately more valuable than others. But this need not deny that during the process itself the variety of methods and contexts was of more significance than any one particular route.

University of York D.T. JENKINS

CHRISTINE MACLEOD, *Inventing the Industrial Revolution: The English Patent System, 1660–1800* (Cambridge: Cambridge University Press, 1988. Pp.302. £25.00).

From Clapham onwards historians employing quantitative methods have cast doubt upon interpretations of the British industrial revolution which stress the widespread incidence of new technology. Such revisionism has now reached an extreme form, most notably in the work of N.F.R. Crafts. He believes that 'it does not seem appropriate to regard innovativeness as pervasive' before the railway age. Not the least of the many merits of MacLeod's book is that it raises serious questions about these new views. By examining developments in the operation of the patent system and by classifying the nature of patents obtained MacLeod adds very significantly to our knowledge and understanding of the extent and nature of technical change in England before and during the early industrial revolution. Though she avoids direct confrontation her researches show clearly enough that it is far too early to write off technical developments as a central feature of the story of modern British economic history.

Inventing the Industrial Revolution weaves together two stories. In the first, the evolution of the patent system – as a 'rule book' and administration – is traced. At the time of the Restoration the system was virtually an appendage to Court patronage. Its connections with invention were very inexact. Yet gradually, particularly in the years between 1690 and 1720, it took on a much more recognizable form, as a system that offered some protection to inventive activity. Much effort is taken by MacLeod to show changes in attitudes towards both patents and technical change. The second part of the book uncovers who patentees were and what uses they hoped their inventions would serve. Though patents are shown to offer a biased picture of all technical change it is convincingly argued that they do offer substantial help in understanding some technical change. Here MacLeod reaches some very important conclusions. Among them, that patenting was an urban phenomenon and was uncommon outside of London, the Midlands and the North-West; that patents were particularly linked to the more heavily capitalised industries and to areas where competition between firms was especially intense; that patents infrequently claimed to be labour saving before the 1790s but often hoped to save on working capital; and that patents were rarely produced by quasi-professional inventors.

An enormous amount of research is on display in this book as MacLeod ably places the records of the patent system into their wider economic and political context. The ambitiousness and scale of this is worth stressing. Too often economic history is flawed by an inadequate consideration of institutional factors and the whole range of qualitative evidence. But MacLeod shows great control of the full scope of her topic. Naturally, this makes great calls on the reader, with detailed examples and masses of footnotes littering the text. But if at times this makes progress slow the writing is always clear and the structure purposeful; only the presentation of the statistics in the tables is less than fluent.

Inventing the Industrial Revolution is an important work, a more than fitting partner to Dutton's recent book. By crossing boundaries it is a book many will profit from – business historians, labour historians, urban historians, historians of ideas and more. Yet it does not fall between stools because, like all good books, it not only adds significantly to what is known and thought but raises a body of questions that simply cannot be ignored.

University College London JULIAN HOPPIT

J.R. HARRIS, *The British Iron Industry, 1700–1850* (London: Macmillan Education, 1988. Pp.90. £4.25).

This is the fifty-third volume in the long established, very helpful and now widely known series published by Macmillan on behalf of the Economic History Society. Like its many predecessors, it has the twofold purpose to survey 'the current state of scholarship' relating to the subject and, perhaps more importantly for the student, conveniently to introduce the central elements of the subject itself. Less commonly, Professor Harris has succeeded admirably in both respects. Indeed, his outline of the principal stages in the production of wrought iron and the technical changes that gradually took place in them, is one of the simplest and clearest expositions to be found anywhere.

Divided into eight chapters of variable length the book is structured to introduce in logical order the principal characteristics of the industry and disassembles the development of scholarship and debate to fit around these themes. The first four chapters consider, in chronological sequence, the development of the industry from medieval bloomeries to late eighteenth-century coal-fueled blast and refining furnaces, with a brief review of changing methods of steel production down to the early nineteenth century. Particular attention is given to the fuel, labour and other cost factors which prompted and shaped the process of technological change during the period and the effects of these changes on the industry's overall level of output. The second half of the volume if mainly concerned with changing market conditions during the seventeenth, eighteenth and early nineteenth centuries. There is a discussion of the changing balance of imports and exports and the great surges of demand consequent on the Napoleonic Wars and the coming of the railway age. Locational changes are also considered here as are the technical improvements of the early nineteenth century and, at greater length, the character, performance and organisation of the iron masters. The latter section is unusual in a book of this type. As Professor Harris notes, 'there would clearly be a serious gap if nothing were to be said', but he finds precious little to deal within general terms because of the '*lack* of research into the group as a whole'. It is not so much a review of past scholarship as an indicator of profitable fields for future work – and a useful prompt for business historians. It is pleasing to see an appendix on the industrial archaeology of the iron industry. Often regarded elsewhere as the unrespectable and unmentionable cousin of academic industrial history, Professor Harris is correct to draw our attention to the outstanding remains and museums of this industry and their value in enhancing our understanding and appreciation of its technical development, geographic distribution, and regional impact.

There is room for one critical word, however, levelled not so much at the author of this volume as the practitioners of 'iron industry' research generally. The study, we are told, is concerned with the 'primary iron industry' – not the manufacturers of iron but those involved in the production of the basic product. Nevertheless, there is little mention here, or in the literature on which this volume draws, of iron *mining*. Since Ashton's day very few writers have bothered to enquire about the sources of the ore used by the iron masters: where and how it was mined; the different types of ore produced; their differing influence on the methods and costs of production; the needs and significance of ore mixing. Among the historians of non-ferrous metals, the study of 'primary' production is almost entirely taken up with discussions of mining techniques with relatively little – probably too little – on smelting and refining. There is clearly a case for a major effort to redress the balance in both areas.

University of Exeter ROGER BURT

GEORGES B. DERTILIS (ed.), *Banquiers, Usuriers et Paysans: Réseaux de Crédit et Stratégies du Capital en Grèce (1780–1930)* (Paris: Editions La Découverte et Fondation des Treilles, 1988. Pp.322 F150.00).

The economic history of nineteenth and early twentieth century Greece has not received much attention from historians writing in English – an exception is Lange and Jackson's *Balkan Economic History, 1550–1950*, published in 1982. In a sense this lack of interest is understandable as for much of the nineteenth century Greece, as a population unit, was a tiny country. Until the 1860s its population was barely a million, rising to two million by the 1880s after the addition of the Ionian islands in 1864 and Thessaly in 1881. Only with the territories gained as a result of the Balkan wars of 1912–13, which doubled the population, did the Greek economy apparently become anything of substance. Yet, as Dertilis and his fellow contributors to this volume of ten essays show, this is an oversimplification. For the Greeks of the *diaspora*, a result of the Turkish occupation of the country, played an important role in the trading and banking network of the Mediterranean economy. During the second half for the nineteenth century, however, their power was gradually eroded as bankers and merchants from western Europe, particularly Britain and France, extended their influence.

Some of the essays in this book will be of interest only to the specialist, for example the lengthy piece by Hadziiossif on banking in Alexandria or the case study of the village of Rapsani by Bournova. However, the three essays by Dertilis, and those by Bakounis, Kalogri, Agriantoni and Kostis, which discuss the Greek economy more generally, merit a wider readership. The picture that emerges is one of an economy which was growing slowly, without undergoing a radical industrial transformation. The economic role of the state was limited by a high level of military expenditure undertaken to fulfil its expansionist aims at the expense of Turkey, and by the crushing burden of debt which this brought about. Between 1830 and 1913 over half of state expenditure was devoted to the needs of war. Consequently little money was available for the development of the infrastructure of the economy. Roads remained poor and there were only 970 kilometres of railway as late as 1897. This hampered the exploitation of the country's natural resources. Nor did the country's banking network serve the needs of industry, finding it more lucrative to finance trade, public debt and even large landowners. Furthermore, as Dertilis shows, at local level, the credit network of the country continued be dominated by 'notables', a group of merchants/moneylenders who had come to prominence in the eighteenth century. This group found it profitable to borrow at relatively low interest rates from the banking system, particularly the National Bank of Greece, and to lend, frequently at usurious levels, to the agricultural community. Only rarely did they finance industrial activity. Strangely, perhaps, in what was an underdeveloped economy, labour for industry was scarce and relatively costly. Greece was overwhelming a nation of small peasant proprietors and sharecroppers who were not attracted to factory work. Even those with insufficient land to support themselves and their families preferred seasonal work on larger farms to industrial employment. Furthermore, from the late 1890s, emigration, largely to the United States, increased dramatically: in 1907 no less than 1.4 per cent of the population migrated. Greece, then, remained an overwhelmingly agricultural country with over two-thirds of the population living in rural areas in the early twentieth century. Compared to industry, Greek agriculture saw some progress. It benefited greatly from the spread of phylloxera elsewhere in Europe – Greece was miraculously spared the disease – which led to an extension of viticulture in general and raisin production in particular. There was also some diversification into cotton and tobacco production. But as with industry, no radical transformation occurred. Increases in output were achieved largely by an extension of the area under cultivation.

This is a useful book though it contains some needless repetition and would have benefited from tighter editorial control. The authors outline the progress of an economy which, while not stagnant, was changing at a snail's pace. The nineteenth century saw political progress in Greece and a considerable extension of the state's boundaries. However, until the 1920s, when there was a period of rapid industrial expansion based on protection, its economy still had more in common with that of the sleepy Ottoman Empire it had succeeded than with the states of western Europe which it wished to emulate.

The Queen's University, Belfast DAVID JOHNSON

PEDRO TEDDE, *El Banco de San Carlos, 1782–1829* (Madrid: Banco de España/Alianza Editorial, 1988. Pp.xii + 395. No price given).

Pedro Tedde's beautifully written and lavishly illustrated history of the Bank of St. Charles was originally commissioned by Spain's central bank in order to commemorate the bicentenary of the foundation of one of its two precursors. Professor Tedde, a longstanding authority on Spanish financial history, has sifted through the rich documentation in the archive of the Bank of Spain – a place few other researchers know better – and made a rigorous use of secondary sources. Over four decades ago Earl Hamilton published a series of three articles in the *Journal of Political Economy* (1945–46) on the foundations and first two decades of the national bank. Tedde's magisterial opus builds on that embryonic account and takes us beyond the death of the bank's founder, the Conde de Cabarrús, ending with the demise of the institution in 1829.

The background to the formation of the Bank of St. Charles is to be found in Spain's declaration of war on Great Britain in 1779 when the country's rulers hoped both to recover Gibraltar and combat British interlopers in her colonial trade. Charles III, unwilling to saddle his subjects with further taxation, was forced to borrow. The authorities accepted a proposal of the French-born Francisco Cabarrús for the issue of so-called *vales reales,* the first paper money in Spanish history. Cabarrús was, as we know from previous accounts, an amalgam of businessman, banker, economist and promoter who had been operating in Madrid throughout the 1770s. Tedde shows him to have been well connected with enlightened circles in the Spanish capital. Charles III's prime minister, the Conde de Floridablanca, credited him with great talent together with vital powers of persuasion. It was to Floridablanca that the young and ambitious Cabarrús presented an elaborate proposal for the establishment of a national bank in October 1781. Addressing his plans to the men of the Enlightenment, he skilfully played down his monopolistic ambitions and argued that his scheme would combat usury, promote agricultural, industrial and commercial development and revitalise an ailing nation. Such proposals, he already knew, had the support of Spain's leading statesmen and financiers, among them Floridablanca and Pedro Rodríguez de Campomanes. After six months detailed discussion by financiers, bureaucrats and other interested parties his project was approved.

Tedde's detailed study, backed up by thorough statistical analysis and succinct quotations from hitherto unconsulted sources, charts the fortunes of the Bank of St. Charles through a half century of fluctuating fortunes for both Spain and its central financial institution. A period of peace and prosperity in the second half of the 1780s was followed by war with the two strongest European powers, Britain and France. Thereafter Spain suffered the loss of her lucrative Empire in the New World. Enlightenment under Charles III gave way to absolutism during the restored monarchy of Ferdinand VII. The Bank of St. Charles, struggling to meet the challenges of uncertain times became, as Tedde informs us, an observatory of the economic modernisation of Spain in these decisive moments.

University of Manchester JOSEPH HARRISON

E.A. WRIGLEY, *Continuity, Chance and Change: The Character of the Industrial Revolution in England* (Cambridge: Cambridge University Press, 1988. Pp.141. £17.50).

In *Continuity, Chance and Change* Tony Wrigley has returned to what he claims is his main research interest, the origins and nature of the industrial revolution in England. Wrigley had set himself two aims: he questions whether industrialisation should be seen as a unitary, progressive and cumulative phenomenon, and secondly he seeks to resolve the contrast between contemporary understanding of economic growth (as evidenced by the writings of the classical economists) and the reality of economic change in the period of the long industrial revolution.

The contents of the book thus follow the scheme set out by the book's stated purpose, the first question being resolved in terms of the answer put forward to the second question. Chapter 1 concentrates upon the constraints upon economic growth in the pre-industrial scenario, constraints which underpinned the writings of the classical economists. In this section, Wrigley's findings on population growth are incorporated into the analysis to explain the limited potential for increased and sustained improvements in real income per head in pre-industrial society. Chapters 2 and 3, which deal with the evolution of the advanced organic and advanced mineral based energy economies respectively, demonstrate how the limitations inherent in the organic economy were overcome. Wrigley is thus able to show how industrialisation was both a long drawn out process and one in which different economies coexisted at the same time. As such, he gives narrative substance to Crafts' estimates of slow growth over time. The idea of slow growth over time in the book then is hardly new. The concept of the long industrial revolution characterised by relatively low growth rates will come as no surprise to economic historians. Slow growth rates are explained in this book in terms of the coexistence of different economies, overall trends in this scenario being depressed by the effects on the economy as a whole of the slow growing sectors. This, again, is hardly a new idea: the concept of the 'dual economy' interpretation of British industrialisation has been well versed by both Pollard and Mokyr. Wrigley however 'spells it out'.

Perhaps the most useful section of the book is the 'number crunching' of Chapter 4, in which investment is disaggregated over section, (again, one suspects that neither Crafts nor Feinstein would be unhappy with the view that investment performance varied over sector), and in which calls are made for further research on energy usage and the effect of specialisation of function on productivity: a theme well versed in the current literature.

Tony Wrigley has always had the ability to generate stimulating work in which interesting ideas for subsequent research are put forward. This book is no exception. The basic ideas are hardly revolutionary, yet economic historians of all specialised interests would gain from reading this book. Business historians in particular will find several topics worthy of research investigation throughout the book: but most notably in Section 4's clarion call for detailed analysis of productivity over sector.

University of Leeds S.M. BOWDEN

CHARLES HARVEY and JON PRESS (eds.) *Studies in the Business History of Bristol* (Bristol: Bristol Academic Press, 1988. Pp. xvi + 278. Illus. £19.95).

Most business historians probably associate Bristol with maritime affairs and tobacco, but Charles Harvey and Jon Press have set out to present a much more varied picture of the Bristol region. They emphasise that they are not aiming to produce a definitive study, but rather to initiate the process of producing a regional business history by paving the way for more studies in depth. The guidelines they laid down for contributors to this collection were that each essay must deal with an aspect of the region that had hitherto been ignored; that each must contain a good deal of original research; that each must be presented in a way that would appeal both to the general reader and to academics; and that each local study must be set against a broad background.

Broadly speaking they have achieved these ends despite the varied nature both of the ten topics and of the eight authors' approaches to their subjects. The editors set the scene in their introductory study of Bristol's economic and industrial life since 1800. They show that although Bristol did not really experience a conventional industrial revolution, its economy was sufficiently diversified to maintain its prosperity – as some industries declined, others expanded to take their place.

The other contributions are more narrowly based. Some concentrate on individual entrepreneurs and firms, others look at industries, and they cover varying time periods in the years since 1800. Stefanie Diaper records the history of the chocolate firm J.S. Fry from 1753–1918; Philip Ollerenshaw looks at banking from 1750–1914; Donald Bateman considers printing and packaging 1800–1914; Peter Davis, together with the editors, investigates locomotive building 1837–1958 and Jon Press examines the footwear industry through the experiences of G.B.Britton 1897–1973. For most large population centres brewing has always been an important industry and Bristol was no exception, as is shown by Geoffrey Channon. Rather shorter time scales apply to Glyn Stone's study of the Bristol Aeroplane Co. 1935–45 and Charles Harvey's history of the more recent development of the Bristol & West Building Society. There is also an interesting study by the editors of the spread of urban transport in Bristol from 1875–1916 showing how new technology offered better means of travel from horse drawn trams to motor buses.

The essays therefore cover industries supplying a range of producer and consumer goods, from large expensive items like aeroplanes and locomotives to small ones such as chocolate, shoes and drinks; and they also shed new light on the provision of services such as local transport and finance. The banking study raises many questions by exposing the lack of information to date about the finance of economic activity in the region and the building society essay illuminates the changing role and functions of building societies in the financial world in recent years. Some of the papers throw light on the problems and opportunities presented by technological change and by the process of growth as handicraft production gave way to mechanical production in large firms.

As laid down in the guidelines the contributors have ranged widely in search of hitherto unresearched topics and of new source material concentrating fairly heavily on business records, newspapers, local and central government sources and records of manufacturers' and workers' associations. All have obeyed the dictum that they should set their subjects in a general context both locally and nationally. The papers are well-written and some are illustrated with hitherto unpublished pictures. There is a useful index.

All in all the result is a useful and interesting book which should serve the editors' avowed purpose of stimulating further interest in Bristol's economy by making both academics and general readers ask for more. Hopefully that challenge will be taken up either by these researchers carrying their work further or by others delving more deeply and extensively into the economic and business history of the region.

University of Liverpool SHEILA MARRINER

CHARLES W. MUNN, *Clydesdale Bank: The First One Hundred and Fifty Years* (London: Collins 1988. Pp. 352. £14.95).

The Clydesdale Bank, founded in 1838 by a group of solid and cautious Glasgow businessmen, is the sole survivor still to bear its own name today of a number of joint stock banks established in Glasgow at that time. Dr Munn's account of the Clydesdale's development over the subsequent 150 years is not only of intrinsic interest but also sheds light on differences in Scottish and English banking practices. From the start the Clydesdale's deposits built up steadily. The prudence of its directors and managers enabled the bank to weather the crises of 1847–48, 1857 and 1878, each of which took a toll of other banks. Appendix IV, which shows balance sheet figures from 1839 to 1986, illustrates the increasing reserves and deposits. It is a pity that the detailed ledgers did not all survive to provide explanations of the fluctuating profit figures; I would have liked to know why, for example, net profit in 1845 was three times that of the previous year and rose to a level not achieved again until the 1860s.

The Clydesdale's prospectus stated its intention of being a local bank in Glasgow but it was not long before it took the chances offered to establish branches elsewhere, and so a network of branches across Scotland was developed. In comparison with other Scottish banks, however, the Clydesdale's branch network remained small, a factor which contributed to its survival in 1857 when other more extended banks such as the Western failed. It was not until the 1870s that the Clydesdale took the more provocative step of opening three branches in the North of England. In the second half of the nineteenth century the Clydesdale enjoyed steady expansion. Dr Munn explores thoroughly the bank's relationships with its customers and competitors as well as the life and conditions working in it. I would have preferred some of the information on directors and managers, particularly the latter, to have been given in the text rather than in an appendix.

It could hardly have been expected that the great merger movement in English banking would leave the Scottish banks unscathed, although there was considerable nationalist resistance to the predatory advance of the English banks. The Clydesdale had enjoyed a friendly relationship with the Midland Bank for many years but rejected its overtures early in 1919. Later that year, when the Midland opened operations in Glasgow, it was obliged to come to terms. 'Affiliation', as the merger was politely and politically called, of the Clydesdale and the Midland was followed by 'affiliation' of the North of Scotland Bank and the Midland. Although a merger of the two Scottish banks was desired by the parent, it was rejected then and again in 1937 and did not take place until 1950.

The Midland's resources and backing proved useful in the interwar years when many of the Clydesdale's long-standing customers, in particular those in shipbuilding and engineering, were badly hit by the depression. Dr Munn examines the relationship between the parent and subsidiary banks both then and from 1945 until 1987. The many changes in banking, particularly over the last two decades, are discussed, as is their impact on the Clydesdale Bank. A summary of major events from 1971 to 1987 concludes the history as a new era opened for the bank. In 1987 the Midland sold the Clydesdale and North of Scotland to the National Bank of Australia. Dr Munn's book is attractively produced and well illustrated at an extraordinarily reasonable price. More importantly it represents a most useful contribution to British banking history.

Oxford Polytechnic JUDY SLINN

P.L.PAYNE, *British Entrepreneurship in the Nineteenth Century* (2nd edition) (London: Macmillan, 1988. Pp. 93. £4.25).

This title in the Economic History Society's very successful series of short Studies first appeared in 1974. It was very well received, was reprinted five times and sold about 10,000 copies. Its deserved popularity is not far to seek. The sections discussing the role of the entrepreneur and the nineteenth-century structure of the firm are still as thoughtful a short introduction to these often ill-defined subjects as are to be found anywhere. This second edition retains the same sub-headings but takes account of the avalanche of business records – 'assuming awesome proportions' – and the increasing flow of company histories. Professor Crouzet's *First Industrialists* has led to a substantial rewriting of the section on the social origins of entrepreneurs during the classical Industrial Revolution. The 'humble – though not proletarian – backgrounds' of those who succeeded are now proclaimed with much greater assurance. The valuable contributions of others such as Katrina Honeyman, Mary Rose and Pat Hudson, Stanley Chapman, Roy Church, William Rubinstein, Ted Musson and Clive Lee are also taken into account, together with some preliminary findings from the *Dictionary of Business Biography* and the *Dictionary of Scottish Business Biography*. (Professor Payne, who has spent most of his academic life in Glasgow and Aberdeen, does full justice to Scottish business and scholarship.) He still finds a dearth of helpful material on the earlier, especially the early Victorian, period; but when he reaches 1870–1914, he can really let go. Wiener's case for cultural conservatism gets short shrift; Lazonick's views receive fuller consideration, the pertinent observation being made that he is not charging British entrepreneurs with lacking managerial skill within given economic conditions but with failure to transform the industrial environment itself. How could they?, Payne asks. And why should they, in face of such high costs and uncertain returns? In this edition he is much more convinced than before that, despite entrepreneurial weakness in some industrial sectors before 1914, British entrepreneurship as a whole did not fail.

The original version of this work was so sound that much of it survives; but there is also so much new material here that this second edition undoubtedly supersedes its predecessor. It is quick and essential reading for economists interested in business growth as well as for historians. It provides an admirable introduction for teachers in business schools and on management courses who remain, on the whole, sceptical of business historians' writings; and from the very full bibliography, now running to 368 items, they may discover further reading more relevant to their interests than they might suppose.

Many misprints have escaped the proof reader and should be corrected at the first reprinting. Those in the text are not so important for they are obvious. Those in the bibliography are more serious. It would be a pity if a twentieth century specialist were to look up B.C.Hunt's book in the expectation of learning about the business corporation down to 1967, or if keen students were to waste time scanning library catalogues for works by J.B.Jeffreys (not Jefferys) or for G.Wilson (not R.G.Wilson). And your reviewer, even in his most affectionate moments, never spelt his name with an 'X'.

London School of Economics T.C. BARKER

ANTHONY SLAVEN and SYDNEY CHECKLAND (eds.) *Dictionary of Scottish Business Biography, 1860–1960. Vol. I: The Staple Industries* (Aberdeen: Aberdeen University Press, 1986. Pp. xvi + 496. £44.00).

This is a remarkable enterprise and remarkable in several dimensions which are not apparent at first reading: it is certainly not just a collection of individual biographies of the most prominent business men of Scotland but a sophisticated and structured exercise in 'prosopography' which provides the data base for much subsequent analysis. For this reason its importance will be cumulative; particularly when the present volume, which covers the staple industries, is used in conjunction with Volume 2, for the processing industries, distribution and services. A third volume is planned as an analytical study, based upon data construed from the biographies contained in the first two volumes.

The staple industries covered in the present volume include the extractive industries (34 biographies), metal industries (26), engineering (27), shipbuilding (18), vehicles (10), textiles (44), clothing (11), leather and footwear (12). The biographies for each sector are prefaced with a key introductory essay, which collectively form a significant industrial history of Scotland. Thus we have an effective distribution of most of the major Scottish industries; leaving for Volume 2 bricks, pottery, cement, glass, timber and furniture, paper, tobacco, food and drink (two major productive sectors for Scotland, both in distilling and brewing), apart from construction, other 'public utility' services such as gas, water and electricity, transport and communications and the more business-orientated service activities in the distributive trades, printing, publishing, banking, insurance and finance. It is a pity, from the point of view of this project, that one of Scotland's other proud contributions to business success, from higher education in all its facets, does not fall within the categories of the 'standard industrial classification'.

Before commenting in greater depth on the structure of the volume, its place in a wider historiographical context may merit a brief discussion. The contributions of industrialists and business men to the national heritage were (and in large measure still are, even in the latest volume) notoriously short-changed in the Dictionary of National Biography, which reflected the cultural priorities of the literary and intellectual élite of its generation. This was also true of entries in the contemporary national pantheon, *Who's Who*. Equivalent awareness of neglect in the left/radical interest produced a *Dictionary of Labour Biography* before the Business History Unit at LSE launched its *Dictionary of Business Biography* (which has an agreed division of labour with the *DSBB*).

It would be a mistake to suppose that the main stimulus for the large-scale undertakings of the DBB and the DSBB was in response to the 'enterprise culture' promoted by the radical Tory ideology implemented after 1979; or even from the 'white-heat of technology' debates of the 1960s. Its roots lay much deeper and its evolution far longer in the developing tradition of academic business and industrial history. In this sense there is a direct pedigree back to the great series of industrial studies emerging from Manchester University Press in the 1920s and 1930s with which the name of T.S. Ashton will be for ever associated.

Certainly business history has assumed a central place in departments of economic and social history (as in faculties of economics and history more widely) since 1945 and this has provided the width and depth of institutional support in universities and polytechnics upon which these major surveys can be mounted. It should also be said that a vigorous regional culture in Scotland and in all the industrial and mining regions of the country has never given rise to a set of cultural norms which would provide the – largely literary – texts from which the conclusions of a study like Martin Wiener's *English Culture and the Decline of the Industrial Spirit in England* could be drawn.

This long-standing tradition of academic business history joined with a later (but still pre-'enterprise culture') research technique of 'prosopography', which did not originate within economic history research. Indeed the largest-scale exercise in collective biography, funded as a major British Academy project, is in ancient history – the lexicon of Greek personal names of which Mr P.M. Fraser is director.

It is fitting that the DSBB should originate in the Department of Economic History of the University of Glasgow, which has a proud tradition of business history (including the first endowed university post in the subject – the Colquhoun Lectureship; and, more recently, another major endowment). The project is also a memorial and a monument to Professor Sydney Checkland, who led the department with such distinction for so long. Both he and his co-editor, Professor Anthony Slaven, are also major contributors – Sydney Checkland contributing 13 entries and Anthony Slaven no less than 25 (particularly for shipbuilding). Sheila Hamilton also contributes 25 and others are not far behind: Professor Payne (particularly for the metal industries); N.J. Morgan for textiles; Brenda White for almost all the entries under leather, footwear and clothing. This concentration of entries under one or two hands for each section itself structures the volume by providing a coherence and unity of treatment. Altogether 47 contributors (most, but not all of them, from Scotland) provide almost 500 pages of double columns. It is a massive work: massive in scholarship, comprehensive in scope.

To equate a collection of individual biographies with a structured analysis of industry requires explicit ground rules if the resulting data is to be construed systematically for purposes of analysis. The period covered by the biographies is the century 1860–1960; with the initial structuring by way of industrial sectors. Within each sector the top ten companies were identified, chosen at benchmark years at 25-year intervals, and the extent of the representation of each sector was determined by its share in the distribution of aggregate employment in Scotland, subject to an overall limit of 400–500 individuals. In the end 192 biographies appear in this volume, as the most important individuals are selected from the larger firms featuring in each industrial sector. This careful structuring (which is more carefully considered than the composition of entries in the DBB) means that this is not just a volume of 'famous men' or the 'top 400/500 industrialists/businessmen in Scotland' over the period.

However, the advantages of such a structure have to bear certain consequences. The logic runs from industry to major firms in the industry, to the key individual representing those firms. This does not follow the logic of a business history which traces the evolution of a firm from small to large over time, with the opportunity to explore the dynamics of growth. It misses out small firms. Nor is this the most natural way of analysis to see the diversity and evolution within a family over time. The dynamic of a family over the generations can be crucial in understanding the context of enterprise, and, although within these individual biographies there is some 'longitudinal' analysis, the logic of this would demand collective biographies of families more than individuals. The intergenerational dynamic of families often cuts across sectoral boundaries (from an original agriculture base, it is often supposed, to commerce or industry, to banking or the non-business professions and back to the land in dynastic sequence, as the myth has it). To test such common assumptions of the path of family commitments over time a different structure would be more revealing; as also with the path of evolution of individual firms. However, taking the distribution of key individuals in major firms over time, construed according to an accurately determined distribution of industry will provide a critically important data base for subsequent analysis when all the biographical inputs have been made. The three volumes will stand as an integral set offering a veritable feast of material on an individual, collective and – above all – analytical and conceptual level. The project will produce the most important analytical tool available for the historical study of entrepreneurship in any industrial economy. Its organisers and creators are owed an immense debt of gratitude by all the economic historians who will use the data; and over time its influence will spend far beyond the narrow ranks of the profession.

Downing College, Cambridge PETER MATHIAS

STEPHEN FAY *Portrait of an Old Lady: Turmoil at the Bank of England* (London: Penguin Books, 1988. Pp. 216. £7.99).

This is the paperback edition of a book first published in 1987 (and reviewed in *Business History* in October 1988). A new short (12 pages) chapter, entitled 'Learning New Tricks', has been added; this covers the period 1987–88, looking briefly at the passage of the Banking Act, the October 1987 stock market crash, the BP sale, and the re-appointment of the Governor, with a glance at the collective leadership. The theme of this new chapter is that the Bank has lost its mystique but gained in professionalism. As Stefanie Diaper noted in her 1988 review, the book is written in a pleasant, readable style, but the approach is that of a financial journalist rather than of an economist or banking historian. The focus is on personalities and arresting events. The treatment therefore must be superficial, but most readers, no matter how well-informed, will learn something from it: Fay's sources are quite good.

Imperial College, London KATHLEEN BURK

DANIEL R. HEADRICK, *The Tentacles Of Progress: Technology Transfer in the Age of Imperialism, 1850–1940* (Oxford: Oxford University Press, 1988. Pp.x + 405. £25).

It has been a boast of the imperialists that, by the removal of barriers to European trade and investment, the non-western world was opened up to the technology and progress of the west through such innovations as railways, sanitation and telegraphs. Railways crossed the Indian sub-continent; shipping and harbours linked the tropics to the advanced world. The opening up of mines in Africa brought Europeans into Central Africa; botanical research aided the transformation of the economies of South-East Asia; while dams and canals transformed agriculture in Egypt and large parts of the Punjab. The achievements would appear to justify the imperialists' claim that these works dominated and overshadowed those of earlier epochs. In all events, the end could be said to have justified the means.

The various technologies which Professor Headrick considers were widely diffused and had major economic consequences. Moreover 'almost all of them came wrapped in flags' (p379). That is to say there was a cost, a cost that came in various guises as guarantees, contracts, subsidies, landing rights and mining concessions. The new economic activities that arose in the colonies were in Headrick's words 'essentially political in nature' (p380).

After an introductory chapter in which Headrick sets the scene of the relationship between technology and imperialism in the tropical economy, the book consists of a series of case studies of specific technologies: ships and shipping, Indian railways, telecommunications, sanitation, irrigation, economic botany, mining, and technical education, with two final chapters on entrepreneurship and the role of politics in imperialist technology transfer. The book is concerned with the period from the mid-nineteenth to the mid-twenteeth centuries. This time span does not, however, coincide with the periodisation of history based on European political and military events, for while 1914 was a significant turning point in European history it was for Asia and Africa the middle of the colonial era. Headrick reminds us that technology is an intrinsic part of the culture and economy of societies; that innovations take place within contexts and that they impact upon societies. He observes, however, that not only does technology exist in a social context but all events and social situations occur in a technological context. While this approach may be a familiar one to students of the Industrial Revolution or the winning of the American West it is a novel approach to the study of Empire. The ability of Europeans to conquer other continents in the nineteenth century sprang from a relatively small cluster of significant inventions. Steam ships, improvements in firearms and quinine between them enabled shipping to appear regularly in African and Asian waters, gave Europeans advantage over their enemies, and reduced the death rate amongst Europeans in the Tropics. The same inventions not only enabled the winning of lands but the control of the newly acquired colonies. This theme has been admirably dealt with by Headrick in a previous book, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York, 1981). In *The Tentacles of Progress* Headrick explores the innovation interactions between the West and the Colonies: the impact of an expanding western economy on world trade and the extent to which raw materials could be supplied from colonial countries; the striving to increase production while at the same time lowering production costs by the application of new scientific and industrial methods to Africa and Asia; the cultural consequences in which colonised peoples became markets for western goods; and, finally, the longer term consequences of western technology being employed for the benefit of the West in the East. The latter, while having immediate consequences for colonial economies and cultures, could have a longer term consequence in western substitutions for eastern products. As aniline dyes replaced indigo and other natural colourings, iron and steel ships replaced an indigenous wooden ship building industry and petroleum replaced palm oil for machinery lubrication, so synthetic rubber substituted for rubber and synthetic fibres substituted for silk.

Headrick discusses, all too briefly, the technology transfer process. He comments that no theory has yet emerged to encompass the complexity of technology transfer. He distinguishes between the relocation of equipment and systems together with the experts to operate them, from the diffusion of knowledge, skills and attitudes related to a particular innovation from one society to another. The distinction is thus between geographical relocation on the one hand and cultural absorption on the other. It is here that a weakness in an otherwise stimulating and excellent book is exhibited. For while there is no universal model of technology transfer there is nevertheless a considerable body of knowledge in this field. This knowledge has only lightly underpinned Headrick's approach to the transfer process. It is clear, however, that the author's intention was to lay emphasis on a series of detailed case studies in the diffusion of innovations from the advanced to the colonial world and this he does admirably.

It is only possible to give some brief indication of the wide ranging and authoritative work contained in this book. In his chapter on mining and metallurgy, Headrick explores the conflicting theories that colonialists were too eager to exploit the natural resources of the colonies for their own purposes on the one hand; on the other, that they contributed too little to the industrialisation of the colonies or even hindered it. In the Belgian Congo, for example, the copper industry was a European enterprise in which Africans were involved only as workers. In Malaya, on the other hand, tin ores had been mined by the Chinese and conflict arose between European companies and techniques on the one hand and Chinese miners and their techniques on the other. Only in the 1920s did the Europeans win, albeit briefly.

In India European investors showed little interest in iron and steel and it was the Indians who built up the modern steel industry using technology drawn from the west by Indian entrepreneurs. Indigenous entrepreneurs only began to influence policy after the First World War in India and Egypt and after the Second World War in other colonies. Headrick lays the blame for what happened subsequently firmly at the door of the West. Traditional handicraft industries, which had been damaged by imports, failed to be replaced by modern industries; the Tropics grew more dependent on Western machines and vulnerable to fluctuations in the world market and to synthetic substitutes. At the same time populations had begun to increase at an ever greater rate 'creating evermore millions of poor and ignorant people without the skill to break out of their poverty' (p383).

Whether or not we accept Headrick's underlying thesis that the impact of western technology led to growth but little development through investment going into physical rather than human capital, this excellent book deserves to be read by all historians seriously interested in the economic development of the colonial world as well as by historians of innovation. Headrick demonstrates his wide knowledge of the sources for a study of economic development in the colonies, the material is organised most lucidly. Altogether not a book to be missed.

University of Newcastle-upon-Tyne JENNIFER TANN

WOLFGANG SCHIVELBUSCH, *Disenchanted Night: The Industrialisation of Light in the Nineteenth Century* (Berg, 1988. Pp. 227. £18.50).

While the title of this book is misleading – as neither the industrialisation of light nor the nineteenth century figure prominently – it is not clear what this study is about. There is no suggestion of context; no statement of objective is presented, nor does the book contain introductory or concluding sections.

Schivelbusch considers the evolution of artificial lighting in terms of the artistic, cultural and psychological impact on its users. Emphasis is placed on the way in which the domestic and social lives of the urban bourgeoisie (mainly in Paris, though occasional reference is made to other European capital cities) were transformed by the provision of improved forms of lighting. Thus he refers to the series of inventions through which candlepower was superseded by the gas and oil lamp early in the nineteenth century and arc and incandescent lighting by the 1870s and 1880s. Technical detail is sparse; pictorial illustrations, instead, are used to indicate the nature of innovation. The discussion proceeds to consider the symbolic significance of these developments while virtually ignoring their industrial and economic implications. The major sections of the book – entitled 'Night Life', 'The Drawing Room' and 'The Stage' – focus on the leisure time pursuits of the idle rich. In the chapter on streetlighting, a subject of concern to all social groups, the provision of such illumination in the nineteenth century is discussed in four pages. A further 25 pages is devoted to the phenomenon of lantern smashing in the early modern period, and the remaining 13 pages to a description of abortive and bizarre experiments in tower lighting.

The book lacks structure and context. It comprises a series of seemingly unconnected vignettes; and it fits uneasily with existing literature, including work such as Thomas Hughes' *Networks of Power*, that really is about the industrialisation of light. Unfortunately, there is little in Schivelbusch's book to interest the business historian, however broadly defined.

University of Leeds KATRINA HONEYMAN

FRANK H.H. KING *The Hong Kong Bank in the Period of Imperialism and War, 1895–1918: Wayfoong, the Focus of Wealth* (Cambridge: Cambridge University Press. 1988. Pp.xxxiv +720. £60.00)

This book is the second volume in a projected four-volume history of the Hong Kong & Shanghai Banking Corporation. As such it covers the period 1895–1918 and though it does help to have read volume I, it can stand alone, aided by the inclusion of the short introductory section summarising the background and main issues involved in the bank's foundation and early growth.

The eleven chapters divide into roughly three groups, being concerned firstly with the bank as a commercial bank, secondly as an investment bank, and then finally the impact of the First World War. In the first four chapters the organisation and business of the bank is described, beginning with its management structure and the division of authority between Hong Kong and London. This then progresses to a detailed examination of the bank's operations throughout the Far East, including the difficult conditions under which it had sometimes to operate, as in the Philippines in 1887–88 with revolution and war. Particular stress is also laid upon the staff the bank recruited, especially those who came from Britain. For them the bank offered both opportunities for advancement and a strict regime of delayed marriage, long periods of separation, and illness and strain under the climate and responsibility. Naturally the drop-out rate was high, including one P.G. Wodehouse.

Providing a bridge to the next group is chapter four which deals with the bank's role in currency and banking in the Far East. What is evident is that the Hong Kong & Shanghai Bank preferred to take a passive role, concentrating upon successfully managing its own commercial banking operations rather than promoting change in native customs and methods. Nevertheless, its example and advice did have considerable influence in the region, and upon the alterations that were made in both the use of money and banking practice.

Chapters five to eight are concerned with the investment banking operations of the bank. From Hong Kong, the bank operated as a 'normal' commercial bank, taking deposits, making short-term loans, facilitating trade and handling foreign exchange both within the region and between the Far East and Western Europe or North America. In this it was aided by its extensive branch network and agencies in the area, and its branches in London, New York, Lyons and Hamburg. However, from its branch in London, aided by its extensive Far Eastern network, the bank operated as an investment bank, specialising in Chinese finance. As such it developed for itself not just a position as the principal means through which Chinese loans were issued in London and purchased by British investors, but also the major international intermediary used by the Chinese to obtain external funding.

In these chapters is described in detail the loans raised by the Chinese in this period, how they were negotiated, what they were used for, and what happened to them. The overwhelming impression is the extreme complexity of Chinese finance in the 20 years before 1914. Not only was it complicated by the financial arrangements that needed to be made so that the loans met the conflicting needs of both borrowers and lenders, but there was also the sensitive political environment to be catered for, involving instability within China and the international rivalry over influence in China. Consequently, loans involved the participation of German, French, Belgian, and British groups for often purely financial reasons and Russian, Japanese and American groups to meet political requirements.

The Russians, for example, were allowed to participate even though they either had to unload the securities in European capital markets or raise loans there to finance their involvement.

The result was that throughout the period the Hong Kong Bank was extensively involved in Chinese finance, arising out of such events as the Sino-Japanese war or Boxer uprising indemnities and railway construction, but this involved forever shifting alliances and rivalries with both other British financial groups and those from European countries and the United States. It is fairly clear that though the Chinese appeared to be obtaining loans from international consortiums, the emergence of these groups was a process of considerable negotiation, giving the Chinese ample scope to play one lender off against another on either financial or political grounds. The loans were by no means as unequal as they may appear considering the circumstances both among the lenders and the status of China as a borrower.

The financial section deals with the Hong Kong Bank during the First World War, concentrating very much on the attempted continuance of normal banking business in the face of staff losses and considerable disruption to both trade and finance. In finance, for example, only Japan was in a position to lend to the Chinese by the war's end. In particular, King stresses the fact that there had been no development of Anglo-German hostility in the Far East before 1914, with the result that the war cut across extensive and long-standing financial arrangements, to the detriment of both countries. Before 1914 much of Britain's exports to the Far East were handled by German merchants who, in turn, were dependent upon Britain trade credit. As a result of these links – including a branch in Hamburg – the Hong Kong Bank was accused of being pro-German by the press and the public.

The book ends with the suggestion that the First World War marked a significant break in the history of the Hong Kong & Shanghai Bank. After the war the bank was much less cosmopolitan in outlook, while the loss of staff, in both quantity and quality, due to death, interrupted training, and limited recruitment, was to create problems for the immediate postwar years.

The final question one needs to ask about this very long and detailed book is what function it serves. There is no doubt that it is a work of excellent scholarship and a real credit to the firm that sponsored it. However, only time will tell if the degree of detail presented is necessary. If King and his associates have been assidous enough in uncovering and presenting a comprehensive account of the bank in these years – which I believe they have – then the strictly banking side of the history has been done, and probably done forever. However, unless they have been sufficiently far-sighted enough to ask and answer all the questions that may be asked of this material, them much of the detail will not be necessary, for others will want to look at the archives again, and come up with their own conclusions. As I believe it is impossible to be that far-sighted, then it has to be questioned whether this book is thus too detailed, with the result that much of interest will remain unread because it is hidden by much that is not.

University of Durham R.C. MICHIE

T.A.B. CORLEY, *A History of the Burmah Oil Company. Vol II: 1924–66* (London: Heinemann, 1988, tables, figures, illustrations, Pp.xvi+416. £20).

By choosing 1966 as the terminal date for his second volume of the history of this major company, Tony Corley is able to end on an optimistic note. After a period of slumber – some might say torpor – the company decided to use its substantial resources to diversify its activities. Burmah had been stimulated to action by a takeover bid from BP in 1963. The bid was successfully resisted. In 1966 Burmah concluded an amicable merger with Castrol, a company which specialised in the development and marketing of lubricants. Castrol not only brought to Burmah a complementary range of activities, it also injected a much more modern approach to business organisation and management. The future was thus set fair. In a brief postscript, however, Corley reveals that whilst, 'Bliss it was in that dawn', hopes were to be denied. By the 1970s the company was suffering exhaustion and facing collapse. But this episode and the subsequent recovery of the company clearly provide Corley with the opportunity for Volume III.

The book as a whole is very readable. The most gripping part is undoubtedly the account of the 'denial' and the evacuation from Burma in 1942. So effective was the destruction of the oil fields and refining plant that the Japanese were able to achieve only partial restoration during their occupation of Burma. But the story did not end here. After the war, the company sought compensation from the UK government on the grounds that the destruction of its assets was carried out on direct military instruction and was not the result of the ravages of battle. So far as could be discovered by the company, English law provided for compensation in the former case but not in the latter. A *cause célèbre* was the outcome and it dragged on from 1948 to 1965. Eventually, new legislation effectively undermined the company's chances of success and it withdrew from the contest.

The book provides a great deal of information on managers and the management style of the company. And a particularly difficult problem faced by the management was the relationship between the company and the Burmese government. A *modus vivendi* of joint ownership of all the company's operations except the important one of marketing, was agreed in 1954, and this arrangement seems to have worked reasonably well despite the somewhat unpredictable and unreliable nature of Burmese politics.

Corley concentrates fairly exclusively on the detail of the company's operations, possibly at the expense of some more comparative analysis of business management and organisation and of the broader operations of the international oil industry. Nevertheless, with other studies in this field, this book contributes to a growing understanding of this core industry of the twentieth century.

University of Bristol B.W.E. ALFORD

PETER CLARKE, *The Keynesian Revolution in the Making, 1924–1936* (Oxford: Clarendon Press, 1988. Pp.348, £29.50).

The last two decades have witnessed an explosion of literature on the origins and course of the Keynesian Revolution in economics and policy making. Inspired in part by the 'crisis' in Keynesian economics, it has also been a product of the desire to trace the historical origins of Keynes's thinking in order to assess its long term validity. Economic historians have made an important contribution to this developing historiography, concentrating on an elucidation of the 'Treasury View' in both its theoretical and practical aspects, and an examination of the case for loan-financed public works as a solution to the problem of unemployment. In this oft-ploughed furrow the point has probably been reached where it is difficult to be original and it is therefore to Peter Clarke's credit that he has succeeded admirably in producing a work of synthesis which is a significant contribution to the literature in its own right.

Inevitably, the focal points of his study are the Treasury View and its Keynesian critique, complemented by Keynes's advocacy of public works and the theory of effective demand. In these respects Clarke has made excellent use of the available primary sources to produce a non-technical but nonetheless sophisticated exposition of the evolution of economic theory between the wars and its policy implications. Particularly noteworthy is the analysis of the case for public works as set forth by Lloyd George in the general election campaign of 1929. In this respect Clarke offers the fasinating revelation, on the basis of a hitherto closed Treasury file, that the notorious White Paper of 1929 (Cmd 3331: *Memoranda on Certain Proposals Relating to Unemployment*) was prepared not in response to the Lloyd George programme but in order to undermine the case for loan-financed public works in the Empire formulated by the Home Secretary, Sir William Joynson-Hicks, as an election vote winner. Of greater significance is Clarke's use of the minutes of the Macmillan Committee on Finance and Industry to produce a fascinating exposition of Keynes's early analysis of the relationship between savings and investment, and his clear discussion of the Treasury's reformulated case for fiscal orthodoxy to embrace pragmatic considerations of confidence and administrative feasibility. Individual contributions to the debate are carefully dissected and the reader is rewarded with a fine examination of the interplay of ideas between senior civil servants and Bank of England officials such as Sir Frederick Leith-Ross, Sir Richard Hopkins, and Sir Otto Niemeyer, and Keynes's fellow economists, notably A.C. Pigou, R.G. Hawtrey, D.H. Robertson, R.F. Khan and Hubert Henderson.

The evolution of Keynes's own views is traced in two fundamental stages, first through the drafting of the *Treatise on Money* and the author's articulation of his findings before the Macmillan Committee, and secondly through the process of intellectual discovery which culminated in the publication of the *General Theory*. In this latter respect Clarke makes a valid distinction between the exposition of a doctrine 'in a form accessible to a professional readership' and the development of 'initial insights, even if they were disjointed flashes of illumination' (p.258). Armed with this perspective (and making good use of Keynes's university lectures) Clarke is able to show that the road to the *General Theory* began as early as March 1932 with Keynes's statement that 'saving was no longer the dog but the tail' in the savings and investment relationship. By the end of the year the building blocks of the *General Theory* were in place and Keynes's subsequent efforts were devoted to the preparation of a theoretical exposition fit for a professional audience. Not unnaturally, the *General Theory* barely mentioned the Keynesian policy agenda. It may, in Hubert Henderson's words, have been 'a child of the slump which began in 1929' but in presenting a coherent theoretical alternative to the notion of a self-equilibrating system it was far more than a mere tract for the times.

It may safely be assumed that Clarke has produced the definitive account of the early origins of the Keynesian Revolution which will appeal not only to economists and economic historians, but also to a more general historical readership. It is well written and richly annotated, and the whole exposition is enriched by its location within a broad political and historical framework. It is essential reading for all students of the inter-war period.

University of Lancaster M.W. KIRBY

ROWLAND F. POCOCK, *The Early British Radio Industry* (Manchester: Manchester University Press, 1988. Pp.184. £27.50).

In much of the historiography of the British economy in the late nineteenth and early twentieth century the future was another country: Germany. The second 'science-based' industrial revolution, it is argued, required higher technical and scientific education, large firms, big banks and a strong state. In his account of the early British radio industry Pocock shows that this key new technology was an exception to this general argument. Britain led the world in radio. The Marconi Co. was the first and largest supplier of radio equipment in the world; outpacing the combined forces of AEG, Siemens & Halske, and the Deutsche Bank. It had the support of neither banks nor large firms. However, its principal customer was the Royal Navy. The Royal Navy was much more than a customer, as Pocock shows clearly for the first time. It had identified the need for a new kind of communication technology in connection with torpedo boats. The Navy's torpedo training school, HMS Vernon, was the centre for electrical engineering work in the Navy and one of the Navy's high-flying officers, Henry Jackson (later a Fellow of the Royal Society and First Sea Lord during the First World War), independently invented radio equipment just before Marconi. A naval officer needs to be added to the list of American, British, French, German and Russian inventors of 'wireless telegraphy'. By 1897 the Navy used radio in manoeuvres for the first time, and by 1900 ordered a large number of sets from Marconi, and in addition produced its own.

Pocock rightly sees the case as an exception to the conventional stories of British technical and economic decline. The Navy was pursuing a policy of modernisation led by the technocratic Admiral Fisher and had excellent facilities, and the money, to support technological innovation. However, he accepts the applicability of much of the conventional story analysing the causes of the British decline, including Wiener's 'rural myth' and sees his own account of radio as consistent with stories that account for a general decline. But while it is important to maintain the contrast in performance between civil and naval technological performance, it is important to note that many explanations of the civil decline invoke the armed services, the Empire and the nature of the British élite as causes of decline. What the radio story shows is that the British élite was in part technocratic, and the armed services agents of modernisation, contrary to two still well established myths. Furthermore, the modernisation of the Navy was not a politically or culturally marginal activity even though, for example, much of the Navy's own work on radio was secret. It was one of the central themes of late nineteenth and early twentieth century British politics.

The Navy and Marconi were two of a number of institutions and individuals searching for a means to exploit Herzian waves in Britain. Radio could have come from other sources. The government, under public pressure, had charged the Post Office with finding a means of 'wireless' communication with lighthouses and lightships, but, as Pocock shows, its practically-trained telegraph engineers were hostile to radio, and incapable of understanding it. On the scientific side, the largely Cambridge-trained mathematical physicists had turned away from the aether theories which inspired radio work by the 1890s. By contrast, 'applied scientists', trained outside the elite institutions, made important contributions, and as Pocock clearly shows they were connected to the reformist press, spiritualism, navalism and Fabianism. Pocock's short book is a very valuable contribution to the literature, using a wide range of archival material. It is admirably clear. Nevertheless, it could profitably be expanded to include systematic comparisons of the development and adoption of radio in other countries.

University of Manchester D.E.H. EDGERTON

PETER L. PAYNE, *The Hydro: A Study of the Development of the Major Hydro-Electric Schemes Undertaken by the North of Scotland Hydro-Electric Board* (Aberdeen: Aberdeen University Press, 1988. Pp.xviii and 354. £25).

The Hydro is, in effect, the official history of the North of Scotland Hydro-Electric Board from 1943, when the Board was founded, to the completion of its last large-scale hydro-electric construction project at Foyers on Loch Ness in 1975. The author, who might be described as one of the founding fathers of modern Scottish business history, also provides us with an account of hydro-electric development in Scotland before the Board's establishment, and a brief epilogue relating to the Board's activities between 1975 and 1987. As the sub-title suggests, the book is essentially a technical history, and presents a wealth of technical detail on topographical and geological matters, on dam construction and on the technology of generating electricity by means of water power. But this is not a book for the technical specialist alone. Such are Professor Payne's powers of plain exposition – and so illuminating is the wealth of illustration he has been able to provide in graphic, photographic and cartographic form – that the non-technical reader has little to fear by way of being blinded by either science or technology.

While technical considerations are of the essence, they do not have an exclusive role in the work. Its value to students of the recent political, economic and social history of Scotland – and especially, of course, of that part of the kingdom lying north of the Highland line – is considerable. Hydro-electric schemes were large, very costly, potentially very intrusive from an environmental point of view, and hence a matter of great political and economic debate, particularly in the early days of the Hydro Board's existence. Professor Payne's discussion of the contentious politics of hydro-electricity in Scotland vividly illustrates the way things used to (and arguably still do) work in the field of Scottish affairs. He shows how small, but determined and powerfully entrenched, interest groups – Highland landlords, the coal-owners both private and nationalised, and so on – were capable of blocking and even aborting projects potentially very beneficial to the ordinary inhabitants of the North of Scotland. Even where schemes could be carried through, their complexity and cost were often substantially increased by the need to placate such interests. Clearly, it was only right that the Hydro Board should have laid upon it responsibilities for carrying out its projects in a manner sympathetic to the Highland environment. But surely not to the extent of making it necessary to design hydro-electric power stations almost as salmon-ladders with incidental generating capacity attached?

The Hydro, I suppose, will always be popularly linked with the name of Tom Johnston, Secretary for Scotland in Churchill's wartime coalition. He not only committed the state to the development of Scotland's potential for hydro-electricity generation, but persuaded the government to get the process under way even while the Second World War was still in progress. The notion persists that this was done with a view to the production of heavy water for use in the atomic bomb programme, a view which Prof. Payne dismisses as implausible. Tom Johnston, having assisted at the Board's birth, became its Chairman in 1946, and his intimate knowledge of Whitehall, Westminster and St. Andrew's House was invaluable in ensuring that many of the Board's more dramatic projects were carried out. But as this book shows, the Hydro Board in its heroic days was very far from being a one-man band. As important as Johnston between 1944 and 1959 in realising the electrification of the Highlands and harnessing northern water-power to supply the National Grid were his technical sub-ordinates – particularly, perhaps, A.E. McColl (the Deputy Chairman and Chief Executive, 1946–51), though it is probably invidious to single out even McColl from the remarkable group of engineers and technicians with which Johnston surrounded himself.

The story of the Hydro between 1944 – when the initial scheme at Loch Sloy was started – and the 1960s, when the last great projects at Loch Awe and Foyers were initiated, was indeed heroic. Working under the most appalling weather conditions in some of Europe's most inhospitable terrain, thousands of men spent hundreds of millions of pounds on a construction programme so enormous that for once developments north of the Highland line made a palpable impact on the British national economy. Obstacles were not merely imposed by nature. Throughout 'the age of austerity' in the 1940s and 1950s, there were chronic shortages of labour, steel, cement and other essential materials. Great ingenuity and numerous technical innovations in dam and tunnel construction had to be employed to overcome these.

By any process of strict accounting, however, the men who built the great dams and the elegant (not only in the technical sense) generating facilities of Loch Sloy, Tummel Valley, Conon Valley, Affric, Strathfarrar and Loch Awe were engaged in an uneconomic enterprise. The sums invested may seem modest by today's inflated standards – £305 millions between 1943 and 1968, or about the cost of a single modern warship. But by the standards of the time they were enormous, and the capital cost per unit of electricity produced was very high compared with thermal generating techniques. The economics of electric power generation were not, of course, the sole consideration in the minds of Tom Johnston and his circle. They had a vision of the Highlands transformed, of hydro-electric power as the agent for reversing two hundred years of economic decline, depopulation and social deprivation. In that sense too, the Hydro was an heroic undertaking, but one that must be accounted in many respects to have been less successful than its begetters had hoped. The idea, for example, that industry would relocate in the North of Scotland to have access to cheap and abundant hydro-electric power may not have seemed unrealistic in the energy-starved 1940s. But it never actually came to much, despite the sterling efforts of the Board's officers to publicise the region's potential. On the other hand, cheap and abundant electricity, or more accurately the amenities of life it supports, has been an important factor in the ability of the Highlands to sustain the mass tourist trade – for which the artefacts created by the Hydro Board have themselves become substantial assets. And who can calculate the benefits of the extension of such a basic utility as mains electricity to the people and communities of the

Highlands? I suspect that, of the mass of statistical data Prof. Payne presents, the fact that would have given Johnston, McColl and their colleagues the greatest satisfaction is that whereas in April 1948 only 4.7 per cent of the farms and crofts in the Hydro Board's sphere were connected to mains supply, by 1972 the proportion had risen to over 93 per cent. And there is this to be said for Highland hydro-electricity: as fossil fuels become scarcer and more expensive, and as the non-financial costs of nuclear power become better appreciated, its economic viability is almost certain to improve. As long as the Scottish rainfall remains as it is, Highland hydro-electricity will at least be an easily renewable resource.

The Hydro Board is clearly proud of what it has done since 1943, and it has a right to be, if for no more reason than the transformation that mains electricity has wrought in the everyday lives of the people it serves. The Board also has every reason to be pleased with the work that Peter Payne has produced on its behalf. He has done them proud, with a masterly exposition of technical matters which still manages to convey a sense of the romance of the whole affair.

University of Manchester ALEX J. ROBERTSON

CLEMENS A. WURM, *Industrielle Interessenpolitik und Staat: Internationale Kartelle in der britischen Aussen – und Wirtschaftspolitik Während der Zwischenkriegszeit.* Beiträge zu Inflation und Wiederaufbau in Deutschland und Europa Bd. 10. (Berlin: Walter de Gruyter, 1988, Pp.xv+ 597. DM 232).

This book is a detailed examination of British attempts in the 1930s to limit foreign competition in steel and cotton by international agreement. It is thus a study in the politics of business-government relations within Britain, and of business-business relations between British and foreign industries. After the steel industry received tariff protection in 1931–32, and a 'fighting tariff' in early 1935, it went on in the same year to conclude an agreement with the continental producers belonging to the International Crude Steel Export Cartel which permitted a limited quota of steel imports from licensed foreign producers at lower tariffs. It seems evident that, once having obtained state support on the tariff issue, the steel industry possessed, in the fact of the high dependence of foreign producers on the British market, a bargaining counter which the cotton industry lacked. Lancashire and Japan competed on third markets, and the Indian textile interest, together with the possibility of Japanese counter-pressure against Indian raw cotton, inhibited the use of the Indian market as a bargaining counter. Moreover, continental steel producers could not out-compete British steel producers in the way that the Japanese cotton industry could out-compete Lancashire.

These simple economic relationships seem to explain why the British steel industry was successful, but Lancashire unsuccessful, in securing competition-limiting agreements. Wurm's chief interest is however in the modifying influence of the state and of general diplomatic considerations on the course of events. In both cases these influences served to moderate the extreme courses of action demanded by industry. A breakdown of negotiations with the continental steel cartel would have contradicted the government's post-1934 policy of growth through foreign trade, as well as its policy of minimising the points of friction with the dictators. The government therefore discreetly but firmly nudged the industry towards a compromise which, however, left the British Iron and Steel Federation, *via* the import licence system, in definite control of the home market. And the government's anxiety to conciliate Japan, on account of its awareness of British far eastern military weakness and fear of US designs in the region, induced it to pressure Lancashire into talks – albeit unsuccessful – with the Japanese cotton industry, rather than concede the extreme empire preference which Lancashire wanted.

The book represents a very interesting attempt to apply the methods of interest-group analysis, by which German historians have analysed German business pressure groups, to a British case. The element of this analysis least explored in it is the formation of businessmen's conception of their own self-interest: but if, for example, the rolling mills were in the free-trade camp in the 1920s but accepted protection with little complaint in the 1930s, the conception of business self-interest may be more problematic than is admitted. The collapse, in 1931, of a hegemonic free-trade ideology, as an event which made public discussion of such trade-limiting schemes possible, is underplayed by a historiographical tradition which assumes that business will always believe its interest to be best served by some form of active government intervention on its behalf.

University of Manchester T. BALDERSTON

ADRIAN ALLAN (ed.), *Business Archives and Education: Proceedings of the Annual Conference of the Business Archives Council, 30 June 1988* (London: Business Archives Council, 1988. Pp.115. £5.50).

Two burning questions preoccupy the authors of the seven papers in this volume. Why have business archives (and by implication the historical works based on them) been relatively neglected in Britain? What can be done by business archivists and historians to reverse the situation? After Donald Coleman's introductory paper the contributors fan out in search of answers at various levels: Frances Blow on the school situation; Nicholas Morgan at the undergraduate level; Theo Barker at the postgraduate stage; Peter Emmerson on the training of business archivists; John Armstrong on management education; and, with some of the best wine kept for last, Robert Rosenfeld on ways in which historical approaches to business strategies can offer powerful tools to current managements. The volume is a must for anyone interested in business archives or business history. The rest of this review simply indicates some of the lines of argument developed in response to the two questions over-arching the volume and the conference whence it originated.

Why have business archives and business history been neglected in Britain? Donald Coleman traces secondary causes: the inevitable gap between scholarship and education, doubt about the representativeness of case studies and single-company histories; the neglect of business history by British business schools; the absence of a business history voice on ESRC committees. Coleman sees few signs that the situation will change in the near future. However, his pessimism meets flat denial from Theo Barker, persuasive argument from John Armstrong and the refutation of contradictory experience from Robert Rosenfeld.

Armstrong, in a useful historical survey of recent developments in the field, points to various positive trends. The last 15 years have seen a string of major monographs; a torrent of aids to business history research; business history series added to the lists of at least three publishers; research centres established in two universities (LSE and Glasgow – to which Cardiff can now be added) and three polytechnics (Coventry, Bristol and Manchester). The political climate established by Mrs Thatcher's government has been conducive to a subject like business history. Surviving and reviving companies have been able to sponsor company histories as centennials and anniversaries have come round. To all of this Robert Rosenfeld adds the success of the problem-solving approach of Warwick University's Centre for Corporate Strategy and Change.

There is another side to the picture, however. As Armstrong notes, there is a yawning chasm at university level between the business historians on one hand and the management specialists on the other. In Britain, in contrast to the USA (and, one might add, Japan), the business schools are wholly populated by technical specialisms all of which teach nuts and bolts skills and theory-based models. No place is found for integrative, reality-based case-studies with historical dimensions. Rosenfeld demonstrates why this is so perilous. If management is about the management of change then erasing the corporate past is asking new managers to steer their organisations blindfolded. Organisational amnesia, the Warwick work shows, is a hazard that managements are most anxious to avoid. This leaves one intriguing question: when will Britain's business schools catch up with the demands being made by the most alert managements in big business?

What can be done about this situation? These papers give answers appropriate to the educational levels they address. Coleman feels there is little opportunity for business history at a school level. One wonders why: the teenagers I taught for a dozen years had plenty of scientists, inventors and trade union leaders pushed at them; why not business leaders? Part of the answer then lay in the content of textbooks. This has changed rapidly in the 1970s and 1980s with the advent of Schools Council History, evidence and skill-based, rather than knowledge-based. Here Frances Blow indicates the areas where business archives might be introduced. Given the current political climate there could hardly be a better time to introduce critical studies of entrepreneurial and company behaviour to secondary school syllabuses. To a schools approach Nick Morgan adds the computer-cum-business archives techniques that he and others are developing with undergraduates at Glasgow University. At the level of business history research it is clear that the Warwick approach, testing theory by utilising historical data, is one of the winning methodologies which will attract people in management and (one day maybe) heads of business schools.

Manchester Polytechnic DAVID J. JEREMY

KEN BUCKLEY and TED WHEELWRIGHT, *No Paradise for Workers: Capitalism and the Common People in Australia, 1788–1914* (Oxford University Press: Melbourne, 1988. pp.296. £22.50)

Do not be deterred by the subtitle (nor the eye-straining type and ungenerous margins). This is not a celebratory 'peoples' history', full of martyrs, heroes and revolutions *manquées*. Although Buckley and Wheelwright adopt a broad Marxian perspective, they neither preach nor hector. They combine economic, social, political and labour history in a lucid, scholarly and entertaining account of the early development of what was, for several generations, one of the world's most unusual societies.

The book begins, rightly, with the forcible dispossession and subsequent exploitation of the continent's Aboriginal inhabitants. In place of their primitive but almost affluent communism came a unique caricature of European capitalism, in which military officers and felons acted out the roles of bourgeoisie and proletariat. Buckley and Wheelwright chronicle the emergence of merchant capital, the rise of the squattocracy, and the implantation of more conventional capitalist relations under the influence of that most scandalous of classical economists, Edward Gibbon Wakefield. They expose the complexities of class conflict in early colonial Australia, emphasising the weakness of the much-vaunted rural unions and the deep divisions (by skill, sex, race and religion) among the urban working class. The Eureka stockade is viewed as a tax revolt by small businessmen, and the Australian Labor Party as a thinly-disguised Antipodean version of Christian Democracy.

It is in many ways a strange story, and it is told in a lively and amusing manner. Engels denounces the 'united states of deported murderers, burglars, rapists and pickpockets' (p.52), while a grazier describes the ideal shepherd as 'an able bodied single man from an agricultural county, humble, ignorant and strong' (p.76). Anthony Trollope sums up the pastoralists in unflattering terms: 'the number of sheep at these stations will generally indicate with fair accuracy the mode of life at the head station: 100,000 sheep and upwards require a professed man-cook and a butler to look after them; 40,000 sheep cannot be shorn without a piano; 20,000 is the lowest number that renders napkins at dinner imperative' (p.109). A Tasmanian supporter of federation exploits the hip-pocket nerve: 'Gentlemen, if you vote for the Bill you will found a great and glorious nation under the bright Southern Cross, and meat will be cheaper; and you will live to see the Australian race dominate the Southern seas, and you will have a market for both potatoes and apples . . .' (p.210). Finally, an English gentlemen bemoans the pretensions of the 'hairystocracy' whose 'doctrine is . . . "Hard work would kill a man"; and he is a philosopher who carries out his theory to perfection' (p.14).

Was nineteenth century Australia, then, a 'paradise for workers'? (The allusion is to a novel by William Lane, the charismatic Queenslander who established a socialist colony in distant Paraguay). Despite their title, Buckley and Wheelwright are forced to admit, somewhat grudgingly, that it was. Lucky the English agricultural worker of 1820 whose standard weekly diet – this for a single man – was 'twelve pounds of wheat or flour and seven pounds of fresh beef or mutton (plus a few ounces of salt and soap)' (p.60) like that of the assigned convict in New South Wales. For most of the century real wages were higher in Australia than in the United States, and the eight-hour day was won earlier in New South Wales and Victoria than anywhere else in the world. While the very rich were never men of the people, the prospects for individual advancement were nonetheless very good.

Then came the great crash of the 1890s, when national income fell by 30 per cent and the full extent of Australia's dependence on a volatile world market became sickeningly apparent. This set the scene for the frustrations and disappointments of the twentieth century, which Buckley and Wheelwright will narrate in the sequel to this excellent book.

La Trobe University, Melbourne J.E. KING

MANSEL G. BLACKFORD, *The Rise of Modern Business in Great Britain, the United States, and Japan*. (Chapel Hill, NC: University of North Carolina Press, 1988. Pp. xi + 176. $19.95 cloth and $8.95 paper).

This book's prospectus suggests it will provide what business historians have been awaiting: a comparative study of British, American and Japanese business history since the pre-industrial period, set in its macro-economic background and written at an economical length. Unfortunately, they will find it a disappointment.

In part, this arises from its brevity. The presentation is at a level which assumes no difficulties or uncertainties in interpretation, reducing its usefulness for undergraduate teaching, certainly beyond first year survey courses. Limited space also requires a strong analytical theme to organise such a large body of material. This is provided, but takes an unconvincing form that leads to important interpretive problems. The author argues that the three countries passed through comparable economic and technological phases which created similarities in their business history. He attributes contrasts to differences in political and social structure. This is too simple. Variations in economic and technological circumstances have themselves created important contrasts in business development which cannot be ignored. This becomes apparent in the exposition of each country's development, but too implicitly. The overall theme therefore distorts interpretation in serious ways by omission and commission.

It is significant, for example, that no adequate reference is made to the significance of relative American-British factor costs for the emergence of the 'American System' of manufacturing. The discussion of business development in the inter-war years emphasises the decentralisation of corporate management in all three countries in response to the difficulties of the period. The unrepresentative nature of this change in the British case is therefore not clarified and the continued significance of collusion and the single product firm missed.

Within this unhelpful framework, the expository mode is descriptive rather than analytical. For example, much is made of the rise of American multinationals and conglomerates after 1945, but no explanation of this form of development is provided beyond the assertion of the need for diversification. There are difficulties with particular topics as well. Discussion of the pre-industrial economy is restricted to trade narrowly defined, ignoring manufacturing activity and the recent discussions of the platform it may have provided for industrialisation. The confidence of British readers will be tested by a passage dealing with 'stop-go' policies, associating them with the alternation between Conservative and Labour governments.

It is disappointing to have to write in such a negative spirit, for the author writes with a clear, lively style well suited to an undergraduate audience. On some topics his presentation is sensitive and penetrating. This seemed, to this reviewer, particularly marked in his treatment of the social context of Japanese business. He provides an excellent contrast between American corporate integration and British reliance on the market in the late nineteenth century. He conveys the idea of the loose, federal structure of many large British companies with great successs. Unfortunately, these are insufficient to discount the problems that make this a book unsuitable as a student text.

University of Lancaster OLIVER M. WESTALL

RYOSHIN MINAMI, *Power Revolution in the Industrialisation of Japan, 1885–1940* (Oxford: Oxford University Press, 1988. Pp. xvi + 399. £37.50).

This is a definitive study by a distinguished Japanese economic historian of a crucial aspect of industrialisation, the importing, adapting and diffusion of modern power technology. Pre-industrial Japan was unusual in the absence of animal and wind power and in the limited use of water wheels. Minami's object is to describe and explain the dramatic impact of modern techniques, their dissemination to large and small-scale manufactures, and the two-way relation between industrialisation and power. He has assembled massive statistical evidence with over one hundred tables, a wealth of technical information and pertinent comparisons with other countries.

After an introduction giving an overview of growth and mechanisation, there is an exhaustive quantitative account of the differential adoption of power, disaggregated by size of factory and type of industry. New methods came earliest in large-scale enterprises in response to expectations of high returns on capital; but they spread also to the small-scale sector, transforming its economic viability and encouraging the persistence of the dual economy. In contrast to the West, steam was transient. Electricity is the essence of Minami's power revolution. By World War I electric power exceeded steam power and by the 1930s electricity accounted for 80 per cent of total manufacturing power capacity. The syndrome illustrates early reliance on foreigners, with Colorado providing a model for hydro-generation and tie-ups in manufacturing with Siemens and Westinghouse. But domestic production took off during the First World War. Electricity was peculiarly suited to Japanese factor endowments. Efficient lighting enabled night-shift working and electric motors were 'divisible' and easily operated without highly-skilled labour. The impact of power on industrialisation is the subject of further comprehensive statistical analysis of silk-reeling, spinning, weaving, lumbering, matches and printing. There are data on output, productivity, costs and profits and fascinating insights into the history of the industries.

Those who find the statistical minutiae somewhat intimidating will welcome the broader comparative issues raised in the conclusion. For example, Gerschenkron's model of relative backwardness is examined but found to be largely irrelevant. Early modern industrialisation was biassed towards labour-intensive textiles rather than to capital-intensive heavy industry. Akira Ono's three-fold classification of borrowed techniques is illustrated from, *inter alia*, unadapted railways, silk-reeling plants which were adapted to save capital, and traditional French hand-looms in weaving. Over time there was a trend rise in the capital-output ratio and the capital-shallowing episode of Fei and Ranis receives peremptory dismissal.

It is one thing to describe the course and effects of Japan's extraordinary success in exploiting the advantages of technological backwardness; it is another to explain why she, unlike so many other late starters, achieved it. The answer lies in a wide range of socio-cultural, political and economic factors summarised by Minami as 'the social capacity to absorb modern technologies'. Elements here include the expansion of demand, the role of the government and, most significant, human resources, an adequate supply of educated workers, engineers, efficient bureaucrats and forward-looking entrepreneurs. A proper examination of these is beyond the scope of the book as are the 'implications for developing countries' which elicit a few concluding platitudes. There is a growing literature from Marxists and non-Marxists, sociologists and economists on 'how Japan did it'. The abundance of data attracts the cliometricians of whom Minami is a notable disciple. His study is an outstanding contribution to our understanding of how Japan transformed from relative backwardness to manufacturing hegemony.

Gonville & Caius College, Cambridge W. J. MACPHERSON

SHINYA SUGIYAMA, *Japan's Industrialisation in the World Economy: Export Trade and Overseas Competition* (London: The Athlone Press, 1988. Pp. 304. £37.50).

This book is concerned with the growth of the tea, raw silk and coal industries and the export of these products from Japan between 1859–99. It explores the problems of overseas competition with which the Japanese were faced as they attempted to break into foreign markets. Both tea and raw silk production were long-time industries in Japan, coal had been extracted earlier by primitive and wasteful methods. Dr Sugiyama by skilfully interpreting a large mass of material in Japanese and English has put us all in his debt. The many tables in the book are a strong feature.

The development in Japan of coal-mining and, simultaneously, the coal export trade was directly encouraged by the strong demand engendered in the Far East by coal-hungry steamships. Even when more efficient double and triple expansion steam engines were fitted into ships demand did not slacken. This put great pressure onto Westerners and Japanese alike to exploit the good supplies of coal of Japan. As Dr Sugiyama points out (p. 178) Nagasaki was some 500 nautical miles away from the coal market in Shanghai. Cardiff was some 10,500 nautical miles distant. Westerners in Nagasaki, including T.B. Glover, were quickly involved in coal-mining (see *Business History*, July 1984). It was from Takeshima and Miike that a good quality of steam coal came. These two complexes were taken over (by 1890) by Mitsubishi and Mitsui respectively. Profitability came for the Japanese as their coal squeezed Australian, British and even Formosan coal out of Far Eastern markets.

Dr Sugiyama has made a careful and close study of the important Jardine Matheson Business History Archive in Cambridge University Library and so has had the opportunity of examining a comprehensive foreign source (most material dated before 1885) to supplement his knowledge of what was happening on the Japanese side.

As is made plain, the restrictions on foreign traders, confined as they were to their toehold in Japan in the treaty ports, put them at a disadvantage. Westerners had perforce to negotiate with Japanese wholesalers in Tokyo or Osaka. Foreign firms could not afford, given the volatile nature of the trade, to hold warehouses stocked full of goods. They therefore used samples. But the Japanese merchant's own business success depended upon him being able to respond to demand, rather than to wait while the western merchant organised imports from China or Europe. The Chinese were often the beneficiaries; they quoted lower prices, they held larger stocks, they could be supplied quickly from China and, one suspects, they had a better understanding of the Japanese market. For the business historian Sugiyama's interpretation of Jardine Matheson's position when faced with an 'unprofitable and uncompromising import business' is valuable and important. Jardine Matheson learnt to concentrate on the export market.

This book makes an important contribution to our knowledge of Japan's economy between 1859–99 although the industries discussed here are only part of the story of Japan's modernisation. In the case of tea the Japanese did some sun-drying or firing but then passed the product to the foreign exporter who undertook 'a thorough process of firing'. The production of raw silk was industrialised although in part on a home and farm workshop basis. It may be that in the case of coal that higher productivity was achieved by the evolution of a single management structure. Pick and shovel mining remained the method of extraction until the First World War.

University of Glasgow OLIVE CHECKLAND

IAN BROWN *The Elite and the Economy in Siam, c.1890–1920* (Singapore: Oxford University Press, 1988. Pp. viii + 196. £18.50).

Ian Brown's new book makes a notable contribution to the growing literature on Thai economic history. The study is a timely one, for it draws attention in a coherent and penetrating fashion to those areas of Thai scholarship which both reflect current interest and offer the most promising avenues for further research. The author is concerned to explore the relationship between the Thai élite and Thai economic development, or the lack of it, in the three decades or so after 1890. His starting point is to discover why Thailand failed either to raise agricultural (rice) productivity, or to develop successful indigenous industries. Dr Brown's approach is to take five subjects, all of them central issues in Thai development, and to examine attitudes, policies and results through a careful analysis of archival and other sources. Coherence is provided both by approach and conclusion. It turns out that Thai élites cannot be blamed for the failure of the country to develop a strongly growing economy. The major causes of apparent passiveness and ineffectiveness on the part of the élites lay in external constraints rather than in internal perversity or narrow self-interest.

Now this is an important conclusion. Modern Thai scholars have argued that Thai élites proved incapable of pushing the economy towards a more dynamic path while Professor Feeny, too, has roundly condemned the policies of the élites. By contrast, Dr Brown argues convincingly that the sheer size of the financial resources needed to pursue a large-scale irrigation scheme in the early twentieth century made such an enterprise beyond the grasp of a poor government, stripped by unequal treaties of much of it potential revenue-raising power. Critical of Feeny, the author thinks that the Bangkok élites were unable, rather than unwilling, to provide the necessary capital and enterprise. A further chapter considers various other largely ineffective government attempts to stimulate agriculture, though since Dr Brown's emphasis is on the roles, policies and capacities of particular individuals it is not always clear that the evidence supports the author's general stand on the significance of external factors.

The remaining three chapters deal with the tin and teak 'enclaves' in the south and north of the country, the development of the Siam Commercial Bank, and finally, a study of government initiative in four areas of enterprise: the successful Siam Cement Co., the short-lived Siamese Steamship Co., and efforts to promote a silk industry and cotton cultivation.

Although the five essays here can present a partial view of the growth of Thailand's economy (Dr Brown himself has explored other aspects elsewhere) the result is a judicious interpretation of Thai backwardness. The author shows convincingly that policy decisions were often the outcome of lengthy and considered deliberations, and by no means an inevitable consequence of élite-dominated sectional interest. Where circumstances were propitious, as in the case of the cement enterprise, government action could be effective. But more often the realities of Thailand's situation forced either inactivity or failure. Dr Brown is surely right to reject firmly a simple analogy between a successful uncolonised Japan and an unsuccessful uncolonised Thailand.

To a considerable extent the five essays and well-argued conclusion do form a coherent study. However, for a book whose focus is upon the relationship between the élites and economic change, it is to be regretted that the author provides neither a discussion of general development issues nor the nature of the Thai élite itself. For example, in discussing the irrigation schemes Dr Brown does not discuss the possible developmental consequences of making the economy even less diversified and more rice-centred than it was. Also, we slip uneasily between concepts of kingship, governments and élites. Even if we accept uncritically a view of virtually absolute royal power in the later years of King Chulalongkorn's reign, this was by no means the case under his weaker successor. We may regret, too, that Dr Brown has allowed his book to be less useful for students than it might have been by omitting any general sketch of the Thai economy in this period. This reviewer finds it somewhat unrealistic, for example, to discuss possible development strategies without at least noting that in 1890 the country had a tiny scattered population (perhaps 6–7 million), virtually no large towns outside Bangkok, no railways, and almost no roads.

The author is to be congratulated on a book which advances the subject both in terms of the material presented and the conclusions reached. Perhaps, given Thailand's current economic upsurge, future research will uncover more positive aspects of the élite's role in pre-revolutionary Siam rather than the essentially prisoner-of-circumstances view put forward by Dr Brown.

University of New England, Australia MALCOLM FALKUS

CATHY L. MCHUGH, *Mill Family: The Labor System in the Southern Cotton Textile Industry 1880–1915* (Oxford University Press, 1988, Pp. 144 £19.50).

For much of the nineteenth century textile production in the United States was concentrated in New England, but from 1880 a rival centre of production developed in the southern states. Concentrating initially on the coarser grades, southern mills gradually upgraded the quality of their output, though it was not until after 1930 that they were able to match the north in the production of the finest grades. This study is concerned with the way in which southern mill owners recruited and trained a labour force during the formative stages of the industry's development between 1880 and 1915. Given the agrarian basis of the southern economy and the location of the mills in the rural piedmont region, where water power was available, the early entrepreneurs were obliged to recruit farm workers who initially lacked the skill and discipline necessary for factory employment. The labour problems of the southern factory masters thus resembled closely those of the earliest cotton factory employers in Britain.

Indeed, since in a large number of other countries cotton textile production was brought into factories at an early stage of economic development, a particular feature of interest in this study is the opportunity that it presents for drawing comparisons across a wide range of settings.

How did southern textile manufactures tackle their labour problem? In Cathy McHugh's account the emphasis is on the system of family labour adopted in the mills. Whole families were attracted from the farms by the prospect of employment not only for the male head of household but for women and children as well. From the standpoint of the workers this represented the possibility of a distinct improvement in their standard of living, while for the employers it permitted a flexible response to the varied labour requirements of cotton textile production. Particularly in the early stages of the industry's development, child labour could easily be absorbed into the less demanding spheres of production. Its use, furthermore, represented a strategy for securing an experienced and disciplined adult workforce in the future. Young workers could be conditioned in the ways of factory life and with the increased earnings that came in the wake of experience, and with the limited alternative employment opportunities available in the region, could be expected to remain with their employer. In this way, McHugh argues, the family labour system made a crucial contribution both to the initial recruitment and the continuing development of a stable, disciplined workforce. In securing such a workforce, employers also resorted to a range of welfare activities based on the mill village. Many of the mills were situated in remote areas where water power was available and firms therefore provided housing for families seeking employment. Company stores were also provided and mill managers were active in local churches and schools. Control of housing gave employers a powerful sanction against rebellious employees while their influence over schools and churches was used to promote the acceptance of social norms that would foster the development of worker discipline. Employer involvement in the provision of schooling was particularly evident in the southern mill villages; apart from promoting desirable worker traits, McHugh argues that schools were perceived by employers as having a function in relation to the recruitment of mature workers. Superior school facilities were expected to attract the most suitable applicants from the farm sector. How effective this involvement in schooling actually was in recruiting and training the sort of workforce management desired must be open to some doubt, since it appears that in practice a large proportion of workers did not take advantage of the facilities provided for their children.

The family labour system of the southern textile industry was one particular response to the problem of creating a factory workforce and in other settings different strategies have been pursued. In her concluding chapter McHugh compares the southern cotton mills with those of New England and Japan. In the latter cases the workforce was composed largely of single females, in contrast to the family units of the south. McHugh concludes that a major determinant of recruitment patterns was the state of the agricultural sector from which workers were drawn. In the New England and Japanese cases family farms were financially viable, though there were pressures inducing single females to seek work in the factories. By contrast, in late nineteenth-century Southern agriculture family farms faced bankruptcy, so that mill owners were able to draw on a supply of relatively cheap adult male labour. In this situation it made sense to recruit additional family members along with the head of household.

McHugh's study is based principally on the records of the Alamance Mill in North Carolina. She has, however, drawn on a wide range of other source material in such a way as to make her study of interest to a broad readership. In general her conclusion is that in the early phases of industrialisation employers did not have the freedom simply to impose their preferred solutions to the problems of labour recruitment and deployment. Instead she believes that there was a complex process of interaction between the workers themselves and their employers. Much recent writing in the field of social history supports this viewpoint, though it must be said that southern textile employers probably enjoyed more freedom than most in creating the kind of workforce they desired.

University of Kent JOHN LOVELL

JAMES S. OLSON *Saving Capitalism: The Reconstruction Finance Corporation and the New Deal, 1933–1940* (Princeton: Princeton University Press, 1988, Pp. xi, 246. £17.50).

This book is about the US Federal Government's principal loan-making agency of the 1930s and 1940s. The Reconstruction Finance Corporation (RFC) was undoubtedly important in making the state's credit available to prop up a tottering financial system, to bail out railroads encumbered by heavy indebtedness and declining revenues, and to assist similarly-troubled farmers and municipalities. The RFC played a multitude of other roles as the New Deal's banker, extending credit to government relief agencies, promoting rural electrification, reviving the mortgage market and, in World War II, pouring billions of dollars of productive investment into expanding the nation's industrial capacity and even founding whole new industries. Professor Olson tells this story with ample detail, though one would like to have seen some systematic, preferably tabular, presentation of the volume of the agency's work.

Olson tells us that this slim volume has been 20 years in the making. He is excessively modest: in that time he has written one other monograph on the Hoover Administration and the RFC (much of which is recapitulated in the early chapters of this book), and a number of articles on the subject, which he does not neglect to bring to the reader's attention. So he has not been labouring 20 years to bring forth one gnat. But the book's origins as one of the many institutional studies of New Deal agencies commenced in the peak years of American historians' interest in the period do show.

The book has no particular thesis, save that the RFC was important, which nobody has ever doubted. Olson persistently refers to the RFC as an agency of 'state capitalism', but never really defines what that means in any full satisfactory manner. The research that has gone into the book seems prodigious, but the bibliography indicates that Olson has little knowledge of the 'recent' (post-1970) literature by political scientists or economic historians which might have helped him make more sense of the RFC's history, or relate it to developing understandings of the political economy of New Deal America. The book is, frankly, a boring disappointment.

Olson's limited strengths are in the area of bureaucratic political history. He explains the political strategies of the RFC's director, Jesse Jones, and the policy consequences of his prolonged battles against other federal agencies, particularly the Treasury Department. He offers no insight into Jones's methods or principles which goes beyond Jones's self-adulatory autobiography. We learn that Jones was a skilful political operator, a doughty defender of his agency's (that is, his own) freedom of manoeuvre, and a rather conservative businessmen who prided himself on running the state's lending arm according to (more or less) 'sound' business and banking principles, none of which is new or surprising.

The book is not very interesting. Much of it consists of secondary literature-based overviews of New Deal programmes which could have been written at any time in the last 20 years; much of its material on the RFC consists of very repetitive lists of programmes or objectives. In some places the repetitions come so thick and fast that one wonders whether Olson has a memory problem and thinks that, if he cannot recall what he has written a handful of pages previously, his readers certainly won't be able to. Or perhaps he is of the school which believes empirical detail to be an adequate substitute for analysis.

Which of course it isn't. Some of the wasted space might have been employed more usefully in explaining the banking terminology and procedures which are used quite liberally, as if any reader would understand them. But more of it should have been given to an account of why politicians, businessmen, and (some) bankers persistently believed there was an unsatisfied demand for credit in the 1930s, which the government should supply. This assumption underpinned some of the RFC's least successful programmes. It was pretty fatuous. Explaining its appeal and its error would have required Olson to have more of an understanding of, or acquaintance with, the economic historical literature than he shows. Given that his book is about a government agency whose major purpose was economic revival (not merely stabilization) through the extension of state credit, his failure to deal with micro- or macro-economic explanations of businessmen's and bankers' behaviour is serious.

This book can be safely overlooked by all but the most dedicated specialist, who will find little enough to interest him in it.

University of Durham HOWELL JOHN HARRIS

DONALD R. BRAND, *Corporatism and the Rule of Law: A Study of the National Recovery Administration* (Ithaca, NY: Cornell University Press, 1988. Pp.ix + 340. Cloth $39.95 / Paper $12.95).

Corporatism and the Rule of Law is both a detailed study of Franklin D. Roosevelt's National Recovery Administration (NRA) – the government programme which attempted to bring about industrial recovery in the United States between 1933 and 1935 – and an intellectual exercise in discussing political theory, especially that advocated by Theodore Lowi in his influential book, *The End of Liberalism*. The two threads are interwoven throughout the book which presents an interesting, though not fully convincing arguments based on an analysis of secondary historical and political works with additional primary research. For economic and business historians, especially non-Americans, some of the arguments and theorising will be pretentious and may seem artificial, but they may offer some different insights into a major experiment in government planning.

What then are the conventional historical judgments on the NRA? Created in June 1933 it was designed as an experiment in co-operation between business, labour and the government with the aim of promoting industrial recovery and attempting to reform the economy. Industrial output would be stimulated through codes of fair competition which fixed prices for goods. To facilitate this, the anti-trust laws would be suspended. The codes, drawn up by committees representing management, workers and consumers, and given approval by the President, also incorporated maximum hours and minimum wage agreements. Section 7(a) of the enabling act (National Industrial Recovery Act) gave labour the right to bargain collectively. Historians have held lengthy and acrimonious debates about the nature, life-course and impact of the NRA but all refer to it as America's foremost experiment in corporatism and most agree that it served the interests of big business because it allowed a strong form of cartelisation which guaranteed profits. Most also think that it failed because its aims were inconsistent and because it unconstitutionally delegated legislative power to the President.

Donald Brand challenges some of these widely accepted views. In his interpretation of the NRA the programme was an endeavour in societal corporatism whereby organised groups like business and labour would be channelled into serving public rather than private interests through fashioning a social compact. But big business cooperation with the programme did not last long because large firms had least to gain from public scrutiny once economic recovery looked possible. Small and medium-sized businesses were more supportive even though the implementation of the policies strained their resources. Case studies of the oil and steel industries confirm the author's general findings. Labour was treated sympathetically under the NRA, albeit not always in line with the demands of the unions. The societal corporatist experiment failed partly because it needed an organisational and ethical revolution to succeed and this did not materialise, but more especially because it was antithetical to the basic American competitive ethos.

Donald Brand's argument is set within the framework of Theodore Lowi's propositions about discretionary administration, corporatism and the rule of law. Indeed his book is a case-study for testing Lowi's theories. In order to understand Lowi better, Brand not only explains his ideas, but also discusses pragmatism, progressivism, pluralism, judicial democracy and the classical liberal tradition of the framers of the American constitution. For those not familiar with American political theory and political history this material may well prove trying. For those who prefer economic analysis or who think that reality rarely conforms to intellectual reasoning, they may prefer to find their information and explanations in an economic history or a history volume. Though partly targetted at an historical audience, this study is more properly the domain of political scientists, political economists and legal scholars.

University of Birmingham MARGARET WALSH

STUART JONES (ed.), *Banking and Business in South Africa* (London: Macmillan, 1988. Pp.190. £29.50).

In recent years, domestic capital formation in South Africa and the industrial and commercial activity it has helped to finance have attracted considerable attention. In part this reflects a natural scholarly interest in an important aspect of the development of an industrial economy, but the political implications of that development have played a large part in stimulating wider interest. The political dimension is recognised by Stuart Jones in his introduction where he argues that neo-Marxist analyses of South African economy do not adequately reflect the complexities of the country's social political and economic structure, and that, in the liberal tradition, economic growth is bringing about social change. Unfortunately neither of these points, nor indeed any other, have been used as the basis for unifying the separate chapters of the book. These appear to have been selected more or less at random and vary considerably in length and, more importantly, in quality.

In the introduction, Jones summarizes the country's economic origins, development and emergence as an industrial economy. Stanley Chapman, one of only two contributors not based in South Africa, then provides a brief but interesting analysis of venture capital and financial organisations in nineteenth-century London and, more particularly in the context of financing Rand gold mining, the investment trust. In contrast, Arthur Webb examines the growth of pre-mining banking institutions, using the Eastern Province Bank as an example; analysing the linkages, both backward and forward, between economic growth/development and financial institutions.

H.W.J. Bosman, in his very brief account of the separation of the Nederlandsche Bank voor Zuid-Afrika (Nedbank) from its Dutch parent raises, but unfortunately is unable to discuss in any detail, several very interesting questions about South Africa's increasing ability to provide its own, internally financed banking base, and South African financial involvement in the frontline states. Grietjie Verhof compares Nedbank's commercial emphasis with that of other banks, stressing its international character. A paper by D.W. Goodhuys on the role played by the Reserve Banks in the economy should have been expanded for publication. In contrast, Katherine Munro provides a concise, useful discussion of the interaction of monetary policy with both economic and political circumstances.

On a theoretical note, Jones examines the development of managerial capitalism using Chandler's *Visible Hand* as a starting point. Jones argues that South African industry has followed broadly the path of Britain, Germany and the United States. Managerial capitalism's progress has been restricted, however, by small market size, antagonistic government policies and other factors. Chandler's forthcoming book *Scale and Scope* does not, apparently, discuss the applicability of his ideas to economies such as South Africa's, but this is certainly a topic worthy of further debate. Jacqueline Matthews' all too brief treatment of multinational corporations and the members of the Southern African Development Coordination Conference (SADCC) argues that foreign investment will benefit these economies overall but the improved welfare of their people will only follow if government policies are directed towards improved income distribution. Barbara Conradie concludes the collection by showing the value of the reports of Standard Bank managers for an understanding of political as well as economic and financial developments. This is a specific instance of a more general point with which many historians are familiar; a good point to make for some who tend to take a more narrow view of sources.

Although some of these chapters raise interesting questions and present useful material, the book as a whole lacks balance and coherence. For example, two articles on Nedbank, only passing mention of Volkskas. The underlying political restriction on finance and the economy could well have been more developed and used as an integrating principle. Libraries should certainly have a copy of this, but the price is rather high for a personal library.

University of Manchester SIMON KATZENELLENBOGEN

RICHARD J. SALVUCCI, *Textiles and Capitalism in Mexico: An Economic History of the Obrajes, 1539–1840* (Princeton: Princeton University Press, 1987. Pp.249. $40).

The history of manufacturing in colonial Spanish America has received relatively little scholarly attention, primarily because of the well-founded assumption that it was of tertiary importance after mining (which employed small numbers but whose principal product, silver, dominated international trade) and agriculture (which in one form or another provided the socio-economic foundations for the lives of 80 per cent of the population). Even though Spain's goal of preserving Spanish America as a closed market for peninsular manufacturers was incapable as early as the seventeenth century of being sustained – because of the uncompetitiveness of Spanish goods against those of foreign producers who entered the Hispanic commercial system through both illegal (contraband) and legal (shipment through Cádiz) means – the opportunities for the development of industry in America were usually confined to areas remote from the main trade routes. These included, for example, the highlands of Ecuador and the remote interior of the River Plate region. The other factor which favoured the growth and survival of domestic manufacturing was concentration upon the production of unsophisticated products for the lower end of the market.

Colonial Mexico, far from being isolated from the main routes of imperial trade, was serviced by one of its principal entrepôts, Veracruz. However, the chronic undersupply of European textiles through official channels combined with other factors – including relative immunity from contraband, the demand generated by mining, and a deep-rooted tradition of textile production (albeit of cotton goods) in the pre-Hispanic period – to permit the development in the sixteenth century of the production of cheap, durable woollen cloth required for the manufacture of goods such as blankets, floor coverings, uniforms, habits, packing materials, and clothing for the urban poor and mineworkers. The typical establishments for the production of this cloth, the *obrajes,* were large workshops, employing on average 40 workers, and enjoying some advantages over domestic weavers primarily because of economies of scale derived from rigorous control of labour.

Although Professor Salvucci draws the bulk of his material from the eighteenth century – a period when increased competition from imports encouraged the migration of the industry from Puebla to Queretaro, where supplies of wool were more accessible – he succeeds in painting a persuasive general picture of the development of the woollen industry throughout the colonial period. Particular attention is paid to the structural changes of the late eighteenth century, and to the devastating impact of insurgency in the decade after 1810 followed by the loss, after independence in 1821, of the administrative and social devices which in the colonial period had provided labour at rates lower than those available in the free market. The availability of cheap, coerced labour had tended to compensate in some degree for the backwardness of technology and the unavailability of credit, except on a very short-term basis. Not surprisingly, the most successful producers tended to be those whose integrated family networks provided them with wool from their own farms, but even they were hopelessly exposed after 1821 to the harsh international competition ushered in by the removal of colonial commercial restrictions.

The book as a whole is well-written, clear and incisive. It may be welcomed as an important pioneering work which inevitably leaves many questions answered, but will serve as an important point of departure for more detailed analyses of individual enterprises and/or local studies.

University of Liverpool JOHN FISHER

BARBARA STALLINGS, *Banker to the Third World: US Portfolio Investment in Latin America, 1900-1986*. (Berkeley: University of California Press, 1987. Pp.xvii, 434. $45.00 cloth; $12.95 paper).

Barbara Stallings has written a thoughtful, informative volume. She argues that the historical experience casts substantial light on the current Latin American debt crisis; her book is analytic, descriptive, and prescriptive. It concentrates on the two important periods of American lending to Latin America – the 1920s and the 1970s. Stallings' data show that historically (from 1899 to 1971) US direct investment (di) flows to Latin America – omitting a few isolated years – consistently exceeded portfolio investment (pi) flows; the only periods of more than two years that this was not the case were the four years 1926–30 (in 1929 di flows exceeded pi flows), and the three years, 1962-64. Then, suddenly, subsequent to 1972, pi flows have in every year (her data go to 1984) sharply exceeded di flows to Latin America. Stallings' series on US pi flows to Latin America is new (her own construction). Her data are on long-term flows, and she is to be commended for her decision to separate them from short-term credits.

Direct investments are business ones: a firm moves into operations abroad. Multinational corporations make di. Portfolio investments are in the sphere of finance. They can be small interests in equity (apparently not included in Stallings' series because these were negligible in the Latin American context) or they can be in bonds or other debt instruments. Separating di from pi are the key actors and their motives. Bankers are the principals in pi; they can also be involved in di, but need not be. Financial return is paramount with pi; financial return is important with di, but the route to that return is through business operations rather than through purely financial transactions.

Stallings' book deals with US pi flows to Latin America. She turns for her theory to research on British capital exports in their heyday (1870-1914). It has long been assumed – and Stallings accepts – that this investment was overwhelmingly pi (an assumption that has recently been challenged, although the most active challengers concede that British pi probably did exceed di). Stallings starts with an articulate summation of the theoretical literature on British capital exports, but she never pursues the question of pi versus di in British capital exports.

Next, she examines the differences between Britain in its heyday of capital outflows and the United States in the twentieth century. This is effectively done, with the goal of determining the applicability of the earlier research. Throughout her book, she weaves the questions posed by the British experience into her comparisons of the two peak periods of US lending to Latin America, the 1920s and 1970s. As she aptly points out, in the 1920s, pi in Latin America went through bonds that were sold to individuals. In the 1970s and 1980s, the Latin American debt has been held by banks (which made the loans using the deposits of individuals, principally Eurodeposits). Whereas in the 1920s individual bondholders were at risk should there be default, now the US domestic deposits are insured by the US government. The move from bond to bank-lending put the US *financial system* at risk, not individual Americans. These institutional differences meant that the unilateral defaults of the 1930s and the indifference by the US government to the plight of the individual bondholders were replaced in the 1980s by negotiated rescheduling with the International Monetary Fund and the US government deeply involved.

Stallings notes that often bankers in the 1970s had not been concerned with how Latin Americans used the loans, since 'money is fungible'. She is excellent in showing the changing characteristics of US portfolio investment in Latin America (recipients, purposes employed, and terms). She is also particularly good in demonstrating the interrelationships between supply and demand for capital. To document the lending process, she offers a case study of US pi in Peru, although she does not seem aware of the full role of oil in US lending to Leguia (she does note that certain loans were secured by oil revenues and that International Petroleum Corporation helped negotiate some loans, but not the earlier broader interconnections). This aside, I very much liked her presentation; especially that part dealing with the 1970s loans.

Recently, many authors including Roy Ruffin, Robert Lipsey, John Dunning, Sidney Pollard, and the present reviewer, have been asking questions on the relationships between pi and di. Stallings' book provides new grist for that discussion mill, along with her new contributions on US lending. I regret, however, that Stallings did not elaborate on the relationships between the two types of capital in Latin America. Likewise, I would have liked to have seen more on the changing role of the public sector in Latin America, and its impact on the substitution of pi for di since 1972. The book suggests that in many countries pi was in the 1970s considered by Latin American governments as an alternative for di, which allegedly created dependency; and that now that pi has created a mountain of debt, many governments wish to attract more di. With di, if there are no profits, there are no obligations for remittances; pi requires regular interest payments.

The great value of Stallings' book is that in exploring and comparing past and present experiences, she provides new insights into both. Her study helps us understand what was distinctive about the early pi as well as what is unique about recent developments. The book is valuable for readers interested in (1) the course of international lending, (2) how US lending to Latin America fits into the broader history of the world economy, and (3) US financial history. I enjoyed this work and strongly recommend it.

Florida International University MIRA WILKINS

CHARLES GOODHART, *The Evolution of Central Banks* (Cambridge, MA and London, 1988. Pp.ix + 205. £20.25 (cloth) and £9.95 (paper).

This book, by a leading monetary economist, is about whether an economy really needs a central bank. The rival merits of central banks versus 'free banking' were much debated in the nineteenth century. In recent years some 'free market' economists have again been questioning the necessity of central banks, and there has been also a spate of favourable re-examinations of the 'free-banking' era in the United States by R.H. Timberlake and others. Have central banks done more harm than good through their intervention in the working of the free market system in banking?

Goodhart, who spent seventeen years working at the Bank of England, has few doubts about his answer. His book is a sustained refutation of the case for free banking. After a lucid discussion of the problems of moral hazard and information asymetry in the industry, Goodhart concludes that a non-commercial, non-competitive central bank is essential for mutual banking support, such as the provision of lender of last resort assistance at times of crisis. Under free banking, Goodhart argues that there would be constant conflicts of interest between the profit motive and the needs of the banking system. A chapter is devoted to demolishing the idea that private deposit insurance could provide a practicable alternative to central bank support for banks at times of difficulty.

Goodhart is not a business historian and this book is not a work of original historical research. Nevertheless Goodhart argues his case by using history: he quotes extensively from the work of past writers on the subject, such as Bagehot, and his evidence is drawn from historical experience, especially that of the United States and Britain. Nearly one-third of the book is an appendix consisting of an account of the central banking systems operative in Continental Europe and Japan at the end of the nineteenth century, which is largely based on material published by the National Monetary Commission of the United States in 1911.

This book is elegantly written and the arguments are convincing. While the advocates of free banking may have some case in theory, in the real world as it has existed, does exist and is likely to exist, a non-commercial central bank is essential for the efficient working of a banking system.

University of Reading GEOFFREY JONES

RICHARD N. LANGLOIS (ed.), *Microelectronics: An Industry in Transition* (London: Unwin, Hyman, 1988. Pp.216. £25).

Possession of a thriving semiconductor industry has often been seen as one of the key determinants of an economy's international competitiveness. The vital role now played by microelectronics in the design and performance of both capital equipment and consumer goods, not to mention its impact on defence products, has pushed the industry into an unrivalled position of political and economic importance. Although susceptible to severe cyclical downturns, as well as being capital-intensive in terms of research and development and production, microelectronics is a dynamic and fast-growing industry which has benefited enormously from government support in recognition of its strategic value as a platform for improved industrial performance. The Americans were the first to realise the advantages of developing this technology, and on the basis of their defence and space programmes of the 1950s and 1960s gained a position of supremacy. As Langlois and his associates recognise in this excellent study, though, American dominance is now under threat from Japan, and the principal concern of their project is to explain this swing in the balance of power and seek possible solutions.

To help readers understand the complexities associated with microelectronics the book starts by examining the technical origins of the products and places this story of rapid change into an industrial context. Essential information on research and development expenditure, industrial structure and market share is examined in great detail, especially for the last 20 years, and then broader issues like technical alliances, competitive strategy and government support are linked into the story. This allows them to develop their basic thesis, namely, that the industry is now international in character, and that national industries are interdependent. In the first place, this makes a nonsense of government policies, which are dedicated to providing indigenous companies with support. Until the 1970s government support was vital to the industry's success, and even in the 1980s Japanese, American and British governments have financed vitally important projects, but now civilian technology is much more influential in determining the pattern of change, and as so many of the world's producers are linked through technical alliances this will inevitably undermine nationalistically-oriented policies.

The crux of the matter as far as these American researchers are concerned lies in the way in which international interdependence could seriously affect the efforts of the US microelectronics industry to stave off the Japanese threat. Although still the world's largest producer and consumer of semiconductor products, the US is faced with some serious long-term problems. Fundamental to the situation in the 1980s is the divergence in strategies pursued by the American and Japanese industries: the former is characterised by a large number of specialists concerned with product innovation; while the latter are usually large vertically-integrated companies which have concentrated on improving the production technology. Langlois uses the historical analogy of the way in which the US replaced Britain as the leading industrial power through its 'fast-second-approach' based upon mass production to emphasise the nature of the 1980s problem. Their conclusion is that American strategies will inevitably produce a greater reliance on Japanese production technology. They recognise the possibility that the industry might develop in a different way, but on the basis of current knowledge it is likely that in time Japan will gain the upper hand. International interdependence will provide American producers with access to the requisite technology, but in future this can only work to the advantage of the Japanese.

Langlois and his colleagues have produced a fascinating, readable account of one of the world's most complicated industries. There are many more aspects of the book which could have been examined, in particular the inept manner in which the British government has mismanaged its development projects up to the early 1980s, but above all it is interesting to see how the American supremacy of the 1960s has now been replaced by international interdependence and a growing Japanese threat. The book is symptomatic of American paranoia when it comes to technological rivalry with the East, and while their government will always provide some safeguards against foreign competition Langlois makes it clear that American companies must alter their strategies or face the consequence of Japanese supremacy. This emphasis on company strategy highlights the key role of the decision-making function at the micro-economic level, and anybody interested in such areas will find this research rewarding. English-speakers may not like some of the Americanisms used, but the analysis is soundly-based and the policy prescriptions incisive.

University of Manchester J.F. WILSON

HELEN V. MILNER, *Resisting Protectionism: Global Industries and the Politics of International Trade* (Lawrenceville: Princeton University Press, 1988. Pp.xiii+329. $29.50).

The author asks why the massive and disruptive growth of international trade since the 1960s has not, so far, led to really concerted and effective campaigns by stricken industries for higher tariffs. Instead firms have often chosen to diversity or rationalise under the flood of East Asian or other imports without real complaint. There have of course been the erection of all types of non-tariff barriers, quotas and voluntary restraints, and great restrictions on agricultural trade, but by comparison with the 1920s, she argues, the general level of protection is still low and trade in most product lines is still relatively free.

The author's explanation for this 'historical puzzle' is that since the 1950s far more firms and industries in America and Europe have developed vested interests in international trade and are hence less concerned to protect their home market. She demonstrates this by analysing a sample of import sensitive industries in America in the 1920s, and America and France in the 1970s. In nearly all cases the American industries in the 1920s – newsprint, woollens, clocks and watches, fertilizer, photographic equipment and textile machinery lobbied successfully against rising imports and secured large increases in the Fordney-McCumber (1922) and Smoot-Hawley (1930) tariff acts. In the 1970s however the American industries sampled – footwear, semiconductors, tyres, machine tools, watches and clocks and radios and TVs, all at least equally import stricken – were far more divided about protection and generally failed to lobby effectively against imports. Many of the stronger firms in each industry now depended considerably on foreign markets for exports or supplies or were multinationals with large component trades between plants overseas. These now refused to cooporate with the smaller domestic firms because of fear of foreign retaliation. For instance the US semiconductor firms maintained a free trade stand throughout the 1970s and early 1980s despite rapidly increasing imports because of divisions between IBM and T.I., which used Japanese sources, and the smaller more domestic merchant firms such as Motorola and Intel. A sample of similar industries in France revealed equal indecisiveness. Strong multinationals like Michelin and St. Gobain (flatglass) generally ignored the French government *and* the EC and relied on their own industrial strategy. Weaker multinationals like the TV producer Thompson Brandt first sought French protection but in the 1970s began moving their allegiance to the EC. By 1980 only small firm industries like footwear continued to lobby the government for quotas, but these were opposed by importing firms in France, and by the strong Italian producers at the EC, until Asiatic imports became a torrent in the 1980s. The author's discussion of French government policy, which was less decisive than expected, and of the firms' growing European orientation, is particularly interesting.

This is a useful book. Not all economists would agree that current overall protection levels are low, but they are certainly less than they could be. Most commentators however might consider the major opposition to increased tariffs has been due to general government policies – which the author discusses in a preliminary chapter – not industry demand. It is hard to imagine a reintroduction of Smoot-Hawley Tariff levels without a collapse of the Atlantic and Pacific trading systems. The continuing broad western consensus on international economic policy must be the primary determinant of the maintained pressure on general tariff levels since 1970. On the other hand Prof. Milner's detailed research and explanation of why the thicket of industry-demanded non-tariff barriers, import quotas, and 'voluntary' restraint agreements has not become even more restrictive is convincing and valuable.

University of Leeds J.R. KILLICK

ALAN J. AUERBACH (ed.), *Corporate Takeovers: Causes and Consequences* (Chicago and London: University of Chicago Press, 1988. Pp.ix+343. £35.95).

Most business historians, if engaged in twentieth-century research, find themselves dealing with mergers, and have to attempt an explanation of why certain mergers occurred and what were their consequences. They tend to consider only the financial aspects, such as the anticipated and any realised improvements in earnings, as revealed in board memoranda and the offer documents and subsequent annual reports. Since academic studies are usually of successful firms, which by definition are on the acquisitive side or alternatively are able to fend off hostile bids, historical work on mergers has on the whole been rather narrowly based.

However, now that business history is forging ever closer links with the social sciences and other disciplines, we need to keep up to date with what economists in particular have to say on relevant topics. The appearance of this book is therefore timely in presenting a broader and more structured view of mergers than has been available hitherto. During the present decade, a huge merger boom has occurred in the United States, of a magnitude not seen perhaps since the 1920s; that has moved the prestigious National Bureau of Economic Research to launch a research project which investigates many facets of merger activity.

In the best academic tradition, theoretical explanatory models are presented and tested with available data, the results then being compared with earlier – usually defective – studies. The editor sets out the agenda in the introduction. To assess adequately the value, or otherwise, of mergers, all the costs and benefits should be included and not just the financial yardstick. Thus, for instance, the redistributive effects require study. Among the gainers and losers will be the labour force, shareholders, suppliers and managers. Hence the aspects considered here include labour and also research and development, taxation and public policy.

Since labour is often neglected in business history, the first chapter is specially to be commended, dealing as it does with the way in which successful bids affect the labour force of the corporate victim. As in Britain, American thoughts on this topic have been conditioned by some very well publicised cases where takeovers have heralded massive redundancies. However, the authors conclude that the outcome is normally somewhat less dramatic and more finely balanced. They usefully separate out different types of merger: in those involving a simple change of ownership or a straightforward amalgamation of interests, wages may decline slightly but employment levels rise, while outright sales of a firms's assets lead to higher wages but lower employment. Admittedly, the authors had to make do with data for one state (Michigan) and relating mainly to small firms. Yet the hypotheses thrown up by their careful scholarship call out for testing in the British case. So do the moderate findings in Chapter 3 on the effects of mergers on research and development activity.

The two more wide-ranging chapters are of especial interest. Chapter 9 attempts to place the US merger wave of the 1980s in historical context. What was the pattern of mergers in this century, and how can they be explained? Unfortunately, the various time series since 1895 cannot be properly linked up owing to differences in coverage. Perhaps in consequence, the results turn out to be only 'mildly encouraging', but the useful groundwork has been done for future research. Chapter 8 compares the method of financing takeovers in the US and in Britain. The fact that once again few clear conclusions emerge is of less interest than that the exercise was mounted at all. Here the authors were working close to the frontiers of the subject, addressing problems in company finance such as those to do with capital structure, taxation and corporate control which the experts have not yet solved.

To conclude, this book is by no means an easy read, being full of equations and regression analysis, and is muted in its findings. Yet it does offer many useful insights and hypotheses. This reviewer, at least, will in future think more deeply about mergers. However, he must voice one complaint. By an almost incomprehensible managerial decision, the publishers sent a non-technical and far briefer version, also edited by Auerbach (University of Chicago Press, 1988) for review to the *Economic Journal* (Vol. 99, March 1989 pp.256–7), with the full version going to *Business History*. Since the former apparently omits the labour chapter and the comparisons between Britain and the US on financing, the decision has been a good bargain for this journal and its reviewer. A challenge remains, though. The rate of advance in most branches of economics is currently so rapid that business historians have to emulate the Red Queen in running fast to keep in the same place and twice as fast to get ahead. Has the time come when the state of knowledge in different sectors of economic research needs to be presented to non-experts through regular surveys?

University of Reading T.A.B. CORLEY

JOHN VICKERS and GEORGE YARROW, *Privatisation: An Economic Analysis* (Cambridge, MA: MIT Press, 1988. Pp.454. £35.95 (cloth), £14.95 (paperback)).

Books on privatisation have appeared at frequent intervals over the last three years. Superficially Vickers and Yarrow have to compete with John Kay, Colin Meyer and David Thompson, *Privatisation & Regulation: The UK Experience* (Oxford University Press, 1986) and, more recently, Cento Veljanovski (ed.), *Privatisation and Competition* (Institute of Economic Affairs, 1989). Vickers and Yarrow need not fear the competition. The other books are essentially compilations of reprinted articles. Vickers and Yarrow have produced a more substantive work which seeks to consolidate and examine a wide body of economic theory relevant to the privatisation debate. Consequently a knowledge of intermediate microeconomics is a prerequisite for the first part of the book, although the most technically demanding sections can easily be omitted.

It is in this part of the book that Vickers and Yarrow distinguish themselves. Here they draw together recent developments in the industrial economics literature. These give important insights into the privatisation debate, the main focus being on whether a change in ownership will increase economic welfare. The reader is introduced to issues such as the differences in incentives facing managers in privately and state owned firms. Where information is imperfect, the owner(s) of a firm have to develop control mechanisms to prevent managers behaving opportunistically, the 'Principal-Agent' problem. Vickers and Yarrow contrast the efficacy of takeovers and bankruptcy in the private sector with the bureaucratic controls available in the state sector. After reviewing the empirical evidence, they conclude that, when competition is effective, private ownership is generally superior.

The authors then address competition and regulation. They argue that competition is beneficial because it increases the incentives to operate efficiently and to innovate. Unfortunately there are a number of markets where the threat of entry is absent, for example natural monopolies. Regulation is therefore required and the difficulties of making this effective are investigated in depth. Here, the main problem is found to be the asymmetrical information between the regulator and the information provider(s). Vickers and Yarrow also consider issues such as the regulation of multiproduct firms, collusion, franchising, and regulatory capture. For instance, the RPI-X formula, used to regulate British Telecommunications (BT) prices, is discussed and revealed to be a variant of 'rate of return' regulation. The longer the period between reviews (five years in the BT case), the greater the incentives to the firm to reduce costs, but the longer the period taken for consumers to benefit from price reductions following adjustments to the contract. This highlights a common theme in the book. Measures to reduce firms' costs often conflict with wider issues of resource allocation.

There is a change of approach in Part II, which discusses the UK privatisation programme. After a brief review of pubic ownership, Vickers and Yarrow conclude that, despite the improvements in the financial performance of the Nationalised Industries in the late 1970s and 1980s, further substantial improvements are warranted. They are critical of the way in which the government has implemented its privatisation programme. For example, they consider that the government has been too conservative with respect to both the form in which the firms have been sold and the prices chosen. The chapters on telecommunications, energy, transport and water are well-researched industry studies. The particular circumstances of each industry are examined in detail for their privatisation implications.

This book is a major contribution to the privatisation literature. It brings together most of the recent developments in industrial economics into a careful investigation of both the practical and theoretical issues involved in the privatisation of the UK state sector. It is well written and currently the best reference available. Even those without an economics background, for whom it is less accessible, will find it a rewarding book.

University of Lancaster PAUL FERGUSON

BOOKS RECEIVED

HENDRIK HARTOG *Public Property and Private Power: The Corporation of the City of New York in American Law 1730–1870* (Ithaca: Cornell University Press, 1983. Pp.xiv+274. $12.95).

M.L. TREADGOLD *Bounteous Bestowal: The Economic History of New York Island* (Canberra: Australian National University, 1988. Pp.xvi+317. A$20).

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CORPORATE BEHAVIOUR IN THEORY AND HISTORY: II. THE HISTORIAN'S PERSPECTIVE

By C.H. LEE

The first part of this study discussed the development of economic theory relating to the nature of business corporations and the markets within which they operate.[1] It traced the evolution of theory from the description of perfectly competitive markets tending ever towards equilibrium to the more complex but realistic structures debated today. The recognition that the many constituent groups within a modern corporation might have differing and even conflicting goals focused attention on the organisational structure of the firm, and undermined the simple assumption that its aim was profit maximisation. The growth of the firm raised other issues, such as the advantages of scale and vertical integration weighed against the difficulties of maintaining control over large operations. As the corporation grew in size, so the market within which it operated was affected. Perfect competition now appears to be such an unusual form of market as to be almost a freak, while imperfect competition and especially oligopoly seem to be pervasive market structures. The erosion of neoclassical orthodoxy has allowed greater variety and realism into modern theory, together with indetermination and scholarly disagreement. It has even accommodated the entrepreneur into at least some recent formulations.

This essay seeks to fulfil three tasks. The first is to outline the approach of historians to the study of the business corporation over the past half-century. The second is to compare this perspective with that of the theorists described in the first part of the study. The final task is to evaluate the current state of business history in relation to economic theory.

Business Biography

In spite of the fact that there has been a large and growing literature on the theory of the firm for many decades, until recently historians have adopted a firmly empirical approach to their investigations and have, with few exceptions, ignored the work of the theorists. The historical tradition developed along two linked but separate streams of scholarly investigation, the first of which was business biography whose origins may be traced to the foundation of a short-lived Business History Society at Harvard in 1925 and, more significantly, to the endowment of a chair in the subject. The first incumbent was N.S.B. Gras, and he established a fairly narrow base for the new discipline by choosing 'to identify business history as the study of individual enterprises and individual business leaders over time – most specifically stated, the investigation of the reactions of the managements of individual concerns to the forces of the world outside their empires'.[2] From the 1930s a stream of business biographies established and set the tone for this approach which was, of course, consistent with the case study orientation of the Harvard Business School.

Since then the business biography has continued to prosper, sometimes sponsored handsomely by the company itself and lavishly published as a monument to success, and sometimes quarried from records and papers which represent the only remains of an extinct enterprise. The range of firms and industries covered has been extensive, and while the bulk of studies have necessarily concentrated on the past century there have been important and interesting contributions relating to earlier periods of history. The quality of these studies has, not surprisingly, varied considerably from crude eulogy and bland description to sophisticated analysis. Nor has there been any obvious progression over time. Some of the earliest works stand comparison with the best of the genre, while productions of modest quality continue to appear. But the volume of business biographies published in the past 150 years has been impressive, as has the size of individual studies, many being of considerable length and some running to two or three volumes. The fact that a substantial number of those who have held chairs in economic history in British universities have written at least one such book reflects the high level of interest in such work and the importance attached to it.

The main strengths and weaknesses of business biography are well known. On the positive side, they represent very substantial additions to factual knowledge about business organisations, their economic environment, and historical change. As such, they cast light on a wide range of important problems and have constituted one of the most persistently lively branches of economic history since the 1930s. The main limitation of the genre lies in the rather narrow format necessarily adopted in studying a single business and viewing events exclusively in relation to that firm. This restriction is compounded by the nature and extent of available records, and by the predilections of the author. Nor are business biographies ever a representative sample of any industry, country or historical period. The great bulk of records, and thence biographies, have been accumulated by the successful and, consequently, large or medium-sized businesses.[3]

In spite of these limitations, business biographies have explored many issues of major importance both to historians and economic theorists, and thus made a substantive contribution to our understanding of the business corporation and its environment. The fact that business biographers have often been concerned with growth and with large enterprises has faced them with the same problems theorists have sought to understand: organisation and control, structural change and vertical integration. Chaudhuri's excellent study of the East India Company revealed the organisational problems of an early international business. Both the Company and its Dutch rival, V.O.C., acted as agents for the distribution of Asian products throughout the world in the seventeenth and eighteenth centuries. The operations of the East India Company were controlled by a Court of Directors in London, under which a series of subcommittees monitored the performance of the settlements in Asia. The presence of several monopolistic organisations selling in Europe created oligopoly in many product markets. To protect their market share, and to co-ordinate an inherently unstable market, the East India Company held a quarterly auction in London. Here it could influence the price level by varying the volume of goods put up for auction, and calculate the profitability of each product by subtracting cost from revenue. This procedure was used to determine the size of future orders from the East.[4] Not all firms have been found to be so careful of their affairs. A report prepared in 1937 for Kenricks, the hardware manufacturers, drew attention to the paucity of reliable data on costs generated by the firm, revealed its failure to control stocks or stores and linked these shortcomings to its poor production and productivity record.[5]

The importance of vertical integration in corporate growth has been as apparent to historians as to theorists, and its development has been traced in several studies. Lever established soap producing branches of his business in the United States, Canada, Australia and Western Europe in the early years of the twentieth century in order to overcome tariff barriers. He also sought, without much initial success, to provide these plants with raw materials grown on the company's own plantations in the Pacific, Belgian Congo and British West Africa. But supply shortages and very high plantation costs constituted major problems for this multinational venture.[6] In the United States, Standard Oil had achieved a high level of vertical integration in its operations by the 1880s. 'In so doing they have succeeded in helping to avert the threatened shortage of raw materials by entering large-scale production of crude oil in the Appalachian and Lima–Indiana regions. Successful activity in the latter had involved the extension of Standard Oil dominance of the American petroleum industry to a wider geographical area and the investment of vast sums in the buying, transporting, stocking, and manufacturing of sour crude'.[7]

Structural change is an obvious and important manifestation of growth. Boyson's study of the Ashworth cotton business demonstrated that it originated as a spinning firm, extended its activities to include weaving in the 1840s, and closed the spinning section in the 1880s to become a specialist weaving business. Unfortunately, the reasons for these drastic structural readjustments were not closely explored.[8] More common cases of structural change have involved merger, and the reasons for this type of commercial change have usually been more fully explored. The supplier of rubber railway springs, Spencer & Co., merged with one of its principal suppliers in 1891, a move stimulated by the fear that a change in the latter's management might reduce the complaisance of its selling policy.[9]

While the business biography necessarily concentrates on the firm, many studies have paid attention to the market environment. Passer observed that the duopolistic market enjoyed by Westinghouse and General Electric in the manufacture of railway motors in the 1890s did not lead to collusion. Several factors stimulated vigorous competition between the two firms. The outcome of technological developments were unknown, personal success within each firm depended on the quality of the engineering work, and both organisations were aware that cost minimising was essential for competitive pricing to generate volume sales.[10] But collusive oligopoly prevailed in some markets. Mason & Barry, Tharsis and Rio Tinto divided the British and European markets for pyrites between them at the end of a harmful price war in the 1880s. A limit price was set, sufficient to deter new firms from entering the industry but low enough to prevent their customers from seeking alternative sources of supply. The increased sales which resulted from this agreement substantially boosted gross profits.[11]

The subject matter covered by business biography has not, of course, been confined to those issues which have attracted theorists, and has ranged very widely indeed. Many studies have investigated business policy, especially with regard to risk. This was an important constraint on insurance companies like Phoenix, whose early nineteenth-century records revealed substantial variations in the loss ratio of different kinds of business, from 10 per cent on shipping to 60 per cent on cotton mills and 81 per cent on sugar refineries. Diversification of business was a vital risk reducing strategy.[12] But control over risk and profitability seldom lay in the control of a firm. Irving's perceptive study of the North Eastern Railway Co. showed that expansion into peripheral activities, such as branch lines and seaside resorts which generated only seasonal traffic, together with customer pressure for improved services, eroded both productivity and profitability. A restructuring of operations in the early twentieth century enabled the company to carry more freights on fewer trains, thus economising on the use of both staff and locomotives and thence achieving a substantial increase in freight earnings per mile.[13] A common problem in early industrialisation was the recruitment and retention of skilled workers. Pilkington, the glassmaking company, scoured the continent for such skilled men and then faced difficulties in dealing with its less highly paid native employees.[14]

Business biographies have contributed evidence and drawn stimulus from some of the problems raised by economic history, such as the origins and finance of early manufacturing firms. Kenricks' hardware business needed the dowry of the founder's wife to launch it, while David Colville started his career as a tea and coffee dealer with funds from his father prior to embarking on his iron manufacturing business, and McConnel & Kennedy funded their cotton firm with investments from mercantile sleeping partners.[15]

This literature has also contributed to our knowledge of wider issues in development. Harvey's study of Rio Tinto revealed that in 1906–8 some 48.8 per cent of the company's revenues were paid in dividends and additions to liquid balances while only 5.4 per cent went in tax to the Spanish government, so successful was the firm in avoiding local taxation.[16] Some British firms appear to have faced greater difficulties in dealing with their own government. Hyde drew attention to the crippling effects of the 1949 devaluation of sterling and the new rules for calculating depreciation allowances in the 1950s which imposed a massive financial drain on Cunard despite favourable market conditions.[17] In a more recent study, Gourvish illustrated the crushing effect on nationalised railways of political interference and financial parsimony imposed by government in the 1950s and 1960s.[18]

Entrepreneurial History

The second of the two streams of historical enquiry into business can also be traced back to Harvard University and was, in part, a reaction against business biography. Gras' emphasis on the internal organisation of the firm was criticised for being 'chiefly concerned with the history of business administration and does not attempt to cover certain aspects of business history that are of primary interest to the economic historian'.[19] The early stimulus for entrepreneurial history was provided by Arthur H. Cole at Harvard, and was helped by a series of meetings organised in the early 1940s under the aegis of the Rockefeller Foundation to discuss the future development of economic history. Several papers were presented at the 1942 conference of the American Economic History Association on the subject of 'Profits and the Entrepreneur', and entrepreneurship was adopted as one of the four fields of enquiry to be supported by the Committee for Research in Economic History.[20] As a result of Cole's prompting, a Research Centre in Entrepreneurial History was established at Harvard in 1948 and, in the following decade, provided the main focus for work of this kind. While the centre was based at Harvard, its funds were obtained entirely from external sources. In fact, the Rockefeller Foundation contributed almost all the finance between 1948–58, $230,000 compared to only $34,600 from other sources. Industry proved to be most reluctant to support the venture, and help was refused by Ford, Guggenheim, Merrill, Falk and Sloan amongst others. Lack of funding eventually led to the closure of the centre in 1958.[21]

The 1940s and 1950s witnessed a considerable output of work on entrepreneurship by the Harvard group and its associates. Following Schumpeter, they took the view that 'the entrepreneur is the key man in the economic system, the agent who directs the allocation of scarce resources in accordance with the desires of the consumers, [such that] an adequate theory of the entrepreneur is the *sine qua non* to an adequate understanding of the economic system'.[22] Views and emphases were diverse, but the thrust of the original group's thinking was to stress entrepreneurship as a quality pertaining to firms rather than to individuals, and to a system in which failure was as important and revealing as success.[23] Two decades later, Aitken reiterated the same theme: 'The term "entrepreneurship" refers to a kind of behaviour which is characteristic of certain organised associations of individuals (usually business firms). It is only in highly exceptional cases that the presence of this characteristic can be imputed to the actions of personalities of single individuals. The general rule is that it is the *association*, not the individual, that exhibits entrepreneurship'.[24]

Such a definition of entrepreneurship was certainly less than Schumpeter's heroic figure would warrant. In fact, Cole went to some length to distance himself from such a view, which he attributed to Gras who 'conceives of the business leader as an independent, free-ranging individual who shapes economic conditions'.[25] But this view of entrepreneurship has continued to attract adherents. 'Schumpeter's theory of economic development was based on a clear distinction between the manager of neoclassical theory who, in modern lamguage, optimises subject to "given" constraints and the entrepreneur who alters these constraints, thus creating new profitable opportunities'.[26] Lazonick has a strong preference for such a definition and damns Victorian businessmen even though they performed admirably as neoclassical managers because they failed to change the framework within which they operated.

This difference of view about the characteristics of entrepreneurship has never been resolved. Alternative definitions have been offered. Sandberg included 'anyone who has responsibility for a firm's decisions concerning the choices of technology, rates of investment and scrapping, research expenditures etc. This group includes individual owner-managers, hired managers and individual or groups of corporate officials'.[27] A different perspective is suggested by Payne who identifies the key characteristic of the entrepreneur as the bearing of risk.[28]

The problem of definition has also dogged the evaluation of entrepreneurial performance, a task which has been a major preoccupation for many historians since the 1950s. A wide variety of yardsticks for measuring success or failure has been suggested, some highly specific and some very general, but all embodying an element of plausibility. International comparisons, productivity growth, profitability, and adaptation to change manifest by the introduction of new technology have been amongst the most popular. Aldcroft sought to assess the quality of Victorian entrepreneurship in terms of technological progress and compared British industry with its German and American competitors. His indictment of British businessmen was based on their failure to modernise steel making plant or to adopt labour saving machinery in coal mining, their failure to develop machine tools, scientific instruments or electrical goods. He also stressed Britain's reluctance to recognise the importance of scientific training, and noted the difference in the representation of trained chemists and graduates in British and German chemical works.[29] In response to this catalogue of disasters, Wilson listed a substantial number of firms and entrepreneurs who enjoyed prosperity at this time, including Lever, Mond, Harmsworth, Lipton, Cadbury, Rowntree, Guinness, Boot and Courtauld. He offered the view that the economy was undergoing a transitional phase in which old industries were giving way to new.[30] Wilson's definition of entrepreneurial success is less explicit than that offered by Aldcroft, and seems primarily to consist of founding businesses which remained active and successful for a century or more. While both protagonists make a number of telling points, it is extremely difficult to determine who should be given the better of the argument. Neither case was satisfactory to the advocates of quantitative analysis who, rightly, pointed out that evaluation of performance must be based on measurement rather than personal inferential judgement.[31]

A number of studies have attempted to evaluate business performance in quantitative terms. Harley, for example, investigated the transition from sailing vessels to steamships in the British merchant marine during the nineteenth century. His criterion for rational business behaviour was that the transfer should occur as the economic benefits of steamships exceeded those of sailing ships. The costs of the former depended on the technical efficiency of marine engines, the availability of coal supplies, and the necessity of allocating part of the ship's capacity to carrying fuel rather than cargo. In principle, therefore, steamships should compete effectively on short routes at first, and on longer journeys as marine engines became more efficient. Investigation of the actual pattern of transfer suggested that shipping firms did respond to such changes and were thus competent managers.[32] But even good entrepreneurial behaviour is not always easy to define or measure. As Allen observed in his study of steel production, 'If high efficiency in Germany and America was the result of improvements embodied in the new plants, then the British industry would have become continuously less efficient precisely because the British entrepreneurs were rational enough not to invest in an unprofitable industry'.[33] Thus a conclusion diametrically opposed to that reached by Aldcroft is proposed on the basis of essentially similar information.

The problems of defining and measuring entrepreneurship have not discouraged historians from expounding general interpretations of economic performance based on the entrepreneur. The Harvard group in the 1950s placed great emphasis on the social environment within which the entrepreneur functioned, and were concerned with sociological problems such as why certain societies produced an entrepreneurial class and whether entrepreneurs reflected the prevailing ethic of a society or were deviant from it. Both Landes and Cochran stressed the importance of social esteem and approval for successful entrepreneurship, while Landes and Sawyer explained the limited industrialisation of nineteenth-century France in terms of the low social value placed on business.[34] Gerschenkron was extremely critical of this, rejected the notion that social values were an effective brake on economic growth, and engaged in a heated and acrimonious debate which revealed the wide range of opinion about entrepreneurship which existed within the pioneering group.[35]

Landes' explanation of modern industrialisation, published almost two decades later, was based firmly on entrepreneurship and the social environment. He explained early industrialisation by contrasting the 'exceptional sensitivity and responsiveness to economic opportunity' of Britain in the eighteenth century with France and Germany where 'the firm, in conjunction with the family ... was an end in itself. This in turn had important consequences for the conduct of the enterprise. It made it difficult to view techniques and products impersonally, to sacrifice where necessary quality to quantity, to abandon traditional ways when more efficient and profitable tools and methods became available. It placed a premium on security and led to an overestimation of risk in investment decisions. It discouraged the use of outside capital, whether in the form of long term loans or share investment, and by throwing the firm on its own resources, drastically limited its opportunities for expansion while encouraging a policy of pricing that maximised unit rather than total profit'.[36] This was obviously an attractive argument since historians have employed it frequently in reverse to explain Britain's poor economic performance as compared to that of Germany during the past century. Why these societies manifest such attitudes and how they come to change them so drastically remains unexplained. But the tradition is an enduring one, recently revived by Wiener's thesis that British society was inherently hostile to industry and that social respectability could only be achieved by moving into some other sphere of activity.[37]

Debates about entrepreneurship have remained at the centre of attention of both business history and economic history since the 1940s. Many historians have traced a direct causal chain from entrepreneurial performance to industrial success or failure and thence to national prosperity or relative impoverishment. The entrepreneur is thus the arbiter of the entire national economic performance.[38] But the problems of definition and measurement have never been successfully resolved. Indeed, it is to some degree the result of this failure that free-ranging and lively debate has flourished. But while many plausible and interesting possibilities have been proposed the indetermination of the concept of entrepreneurship has been a vital flaw. The substantive gains from this approach have been limited. Since any serious evaluation of performance requires measurement, and is a futile pursuit without it, the most significant studies have been those which examined profitability, cost minimisation, or which defined the criteria for success like Harley. In the more ambitious attempt to explain aggregate economic performance through entrepreneurship, this approach has been totally unsuccessful. The weaknesses in definition and measurement have been compounded by the failure to identify the linkages of cause and effect from entrepreneur to aggregate economy save in the most elementary terms. An appeal to the Schumpeterian hero has an obvious appeal, but smacks very much of a *deus ex machina*. It also begs the crucial question of how the entrepreneur can rise above the economic environment of the market and refashion the economic system to his taste. As early as 1949, Easterbrook commented on the entrepreneur: 'He turns out to be an extremely elusive entity, at times difficult to find, or not to be found at all, and frequently so subservient to other entities and ideas that he does not warrant the search ... criticism rests, as indicated, on the generality of the concept of "entrepreneur", a result of the failure to identify him with any specific set of conditions'.[39]

Business History and Economic Theory

For much of the period since the 1930s, the two major streams of historical investigation of business biography and entrepreneurial history have remained empiricist in approach and content. As Hannah expressed it critically: 'Most business historians have clung to a tradition, which, at its best, is a triumph of narrative skill, honest to the facts of the individual case, but at its worst is narrow, insular and antiquarian'.[40] Some of the exponents of entrepreneurial history perceived a need for some general framework. Hughes argued that the entrepreneur could act as a focus for historical interpretation, but warned that 'the entrepreneurial role can be made coherent only within some sort of explicit analytical framework'.[41] Others, like Passer, thought that entrepreneurial history could help the development of economic theory by revealing the mechanisms of economic change through answering questions about business behaviour.[42]

More ambitiously, Cole attempted to integrate business biography with entrepreneurial history within a theoretical framework, as aggregative business history. 'The new orientation would lie distant from the main body of economic theorising and even from economic history. Rather it would develop its own body of hypothesis and its own supporting data of historical facts – facts relative mainly to evolving business functional sectors, changing entrepreneurship, and even changing patterns of relationships both among the business units of successive periods and between the business world and the rest of society'.[43] Subsequently, he attempted an even more ambitious task in his efforts to create a new theoretical dimension within economics. 'I propose the adoption of a new term, "meso-economics", to indicate the totality of the business system which as a separate element in the economic world seems largely to have escaped the notice of economists

... I propose to designate as "meso-economics" the external relationships of individual business units and the interconnections amongst quasi-aggregates of the whole business system'.[44] This new branch of theory was intended to fill a void between microeconomics and macroeconomics. It would be concerned with economic growth, the impetus for which came from the expansion of the business system through the activity of entrepreneurs. It would be distanced from conventional theory, Cole argued, by virtue of its emphasis on growth, the rejection of 'any notion of a trend towards equilibrium or any assumption of stability of relationships', and by the central role it would assign to the entrepreneur.[45]

Cole's hopes for a new theoretical structure either within or beyond the bounds of conventional economic theory were disappointed, and business history, especially in Britain, remained largely isolated from theory. The basic attitude of many was articulated by Hyde, who noted the limitations of theories which depended on the assumption of profit maximisation and, therefore, could not cope with less than rational behaviour such as stubbornness, excessive caution or ebullient individualism. He contrasted the restrictions of theory with the flexibility of the historian to adjust his explanation to take account of awkward facts. 'The business historian, on the other hand, in reporting events, is not so inhibited. He accepts as normal material for historical analysis the odd and sometimes irrelevant considerations which colour the taking of decisions. He can also, by analysing motives, very often arrive at precise judgements about behaviour. Alternatively, if he cannot arrive at precise judgements, he can, from his interpretation of factual knowledge, offer suggestions as to cause and effect in a much more realistic interpretation than the economic theorist can hope to achieve'.[46] This view has remained popular, the flexible empiricism of the historian juxtaposed against the proscribed unreality of neoclassical economics. Thus in the 1970s, Church reiterated the view that profit maximising theories had limited value and that behavioural theories of the firm were relevant only to the study of large organisations.[47] In 1987, Coleman gave a similarly dismissive judgement: 'The fact remains that the neoclassical theory of the firm, even when modified to take account of varying sorts of market imperfections, is not about firms as entities. It is about price adjustment, for products and factors, in various assumed conditions of competition'.[48]

But business historians did recognise the fragmented nature of their discipline. The increasing pile of business biographies failed to add up or combine into a coherent entity, and the unifying framework of the entrepreneurial debate seemed to be too free in tolerating the casual use of terminology but too restricted in the subject matter it covered. The most likely source for a unifying structure from within business history was provided by Chandler's work on organisational change. Alford, seeking to dislodge the entrepreneur from centre stage in business history, proposed that the 'most fruitful line of approach is to attempt to relate individual case studies to a more general typological analysis of business development along the lines first suggested by Chandler'.[49] But Chandler's vision has also been subject to criticism in that it proposes a sequence of development without any time scale, making it another accommodatingly vague thesis. Furthermore, this perspective takes no notice of the market environment in which a firm operates and which must have some influence upon its structural change and the decisions which determine them. 'Functional behaviour is defined to be that which adapts an organisation to a strategy insuring its survival. Beyond such economic Darwinism, Chandler's judgements and insights hardly penetrate. Without explicit standards of judgement, the historian of business may appear to be not so much the apologist for management, as simply its court historian'.[50]

Business History and Economic Theory in the 1980s

In spite of the antipathy towards economic theory amongst business historians during much of the past half-century, and which remains undiminished in some quarters, there has been a marked increase in the adoption of the perspectives, ideas, and models produced by theorists in the writing of business history in recent years. This change is the result of several interrelated factors, the most important of which is the diversity and relevance of much of that theoretical work to the problems which business historians wish to address. Theories of the firm have evolved far beyond the simple neoclassical model, which was being challenged as early as the 1920s, and those who continue to describe economic theory in such terms merely reveal their unfamiliarity with the voluminous literature which has appeared in the past fifty years. Economic theory does provide a coherent framework within which to investigate business problems, raises important issues and suggests avenues for exploration. It therefore fills a function which business biography, by its nature, was never able to attempt and for which entrepreneurial history proved to be inadequate. The recent literature, on British topics alone, indicates that many business historians are now taking advantage of the opportunities offered by economic theory.

Structural and organisational change have attracted considerable attention. Chandler extended his own thesis in drawing a contrast between British and American responses to growth. In the United States, he argued, mergers led to increased productivity through rationalisation and centralisation while in Britain they were used simply to restrict competition. In British firms, internal structures remained unchanged and the failure to develop organisational hierarchies inhibited the cost cutting capability of firms.[51] Hannah's study of the growth of the modern corporation reflected Chandler's ideas and dealt with issues such as ownership and control, growth and structure.[52] Structural change, or its absence, was central to Lazonick's analysis of the long term decline of the British cotton industry. 'The fundamental problem was an industry mired in its own highly competitive and vertically specialised structure, lacking any internal forces to set in motion structural transformation'.[53] This appears to be a valid judgement for the industry in the twentieth century although, as has been observed, the notion that such specialisation represented a constraint on performance before 1914, when demand was stronger and competition less fierce, is highly questionable.[54]

Vertical integration has been as prominent in recent historical work as it has been in theory. Many of the investigations have explored the internalisation of transactions, utilising that body of theory which integrated Chandler's ideas into the main stream of modelling the growth of the firm. In the copper mining industry pressure to improve technology provided a major propulsive force towards vertical integration. While the market for copper was controlled by a few firms, a state achieved by growth and merger, the volatile market price for copper still lay beyond their control. Furthermore, increasing costs from larger scale mines needed to secure lower grade ores required greater investment. High extraction costs and transport facilities needed to exploit the new mines in geographically remote areas had a similar effect. A mixture of technological factors and market pressures thus impelled copper mining companies to increase in size in order to finance and operate their businesses. The same economic forces encouraged vertical integration into refining and fabricating which, in turn, further increased capital requirements.[55]

Growth of the firm through vertical integration has been a step on the way to establishing multinational corporations, and these institutions have attracted much attention from both theorists and historians in recent years. Jones drew a distinction between multinational behaviour in different phases of development, suggesting that Dunlop behaved in the interwar years as a classical oligopolist, responding to threats from known competitors, although prior to 1914 the firm had established overseas plants primarily to exploit and protect patented technology.[56] Nicholas examined the agency selling system from the perspective of transactions cost analysis. He argued that British firms registered as agencies abroad what were, in effect, branches. Failure to recognise this practice has led historians to underestimate greatly both the growth of British multinational enterprises abroad before 1939 and the value of direct foreign investment this involved.[57]

Given the problems which have afflicted British industry during the past century, it is hardly surprising that considerable attention has been paid to various manifestations of market failure. This idea was stressed in Supple's analysis of British and American coal mining between the wars. The continuing exploitation of new coalfields, the tenacity of inefficient firms in managing to remain in business, and the fragmented structure of the industry produced both a chronic tendency towards surplus capacity and little prospect of co-ordinated action to remedy the situation. The involvement of government was important, and in both Britain and the United States the response of the state was determined by a political desire to stabilise the economy of mining communities. Thus wages and standards of living were improved by keeping under-utilised productive capacity in operation and by keeping the price of coal at a high level which, in the long run, eroded demand and exacerbated the basic problem.[58] Governments have been influential but far from consistent in their policies concerning industry, although some features of their involvement have been too consistent. The privatisation policy of the present administration has been depicted as being 'consistent with much that has characterised government-industry relations throughout this century. Consistent in resurrecting the old issue of ownership; consistent in being motivated primarily by political considerations; consistent in its inconsistent attitude towards competition; and consistent in the ability of managers to determine the future structure of their industry. Both government and managers are likely to achieve their main aims. In the process, opportunities to improve the performance of many basic sector industries will have been missed'.[59]

Part of the process by which economic theory is developed, modified, and improved lies in testing its models against the experience of the real world. In recent years, there has been a marked increase in historical work of this kind. The importance of the division of ownership from control was recognised in the 1930s, and its historical influence has been observed in the context of the twentieth-century steel industry where diffusion of control inhibited reconstruction.[60] Statistical analysis has been used to explore the size of share ownership required for control, and found that groups holding quite small proportions of the total stock could secure control through judiciously formed coalitions.[61] Atack tested the Chandler thesis that nineteenth-century corporations evolved by taking advantages of continuous process technology. He found that few American firms changed their structure between 1870 and 1900, although the ones which had become distinctly larger in scale were the ones which Chandler identified thus providing qualified support for the thesis.[62] The application of statistical techniques has enabled historians to test the efficiency of firms, and thence the effectiveness of their entrepreneurs. Foreman-Peck's investigation into the natural monopoly of the British railway system in the Victorian period lent support to Irving's argument that longer hauls and fewer trains with higher freight and passenger loads per train could have greatly increased efficiency. He found that British railway costs were higher than those in other industrial economies, and attributed part of this relative inefficiency to the unregulated market system.[63] Millward and Ward estimated cost functions for both public and private gas enterprises at the end of the nineteenth century, and found only a small difference between them.[64]

Business History in the 1990s

Predicting the future is not a natural nor perhaps a wise indulgence for the historian. But the development of business history in recent years does allow some modest extrapolation of current trends. One of the most obvious of these is the convergence between business history and those parts of economic theory which are similarly concerned with the firm and the market. This body of theory is able to provide a coherent framework to give structure to business history, something which neither business biography nor entrepreneurial history could achieve. Business biography has produced a considerable volume of invaluable evidence, and a beginning has been made in collating these studies to investigate themes of major importance.[65] Entrepreneurial history, in spite of the enthusiasm and debate generated, is an approach which lacks the analytical penetration needed to resolve the problems it has sought to explore. It has surely outlived its usefulness. But to advocate its abandonment does not mean that entrepreneurship can be ignored, but rather suggests that it is best examined by other means, as in applying various tests for efficiency. It does mean, however, that the Schumpeterian vision should be abandoned in favour of analysis of the firm or the individual operating within the economic framework, as expounded by Kirzner.[66]

The advantages of closer links between business history and economics are many. Modern developments in theory have produced a considerable volume of ideas, insights, and testable hypotheses from which the historian can profit. Chandler's work on organisation and structure, which was a signal contribution developed through historical investigation, became more significant and influential when it was integrated into the framework of transactions cost theory. Since the substantive interests of the business historian and the theorist of the firm are closely related, the theory can provide a framework within which the historian can identify and pursue many of the problems which attract him/her. Conversely, by testing theories against the real world, the historian can evaluate their competence and thence help the development of theory as the early entrepreneurial historians hoped. Indeed, there are already hopeful signs of such collusion and mutual enterprise.[67] One of the objections to the use of theory advanced by historians has been expressed in terms of the loss of flexibility and freedom in their investigations. It is difficult to see how the use of theories, which are working hypotheses not rigid sets of rules, can be so constricting. Furthermore, as the literature on entrepreneurial history has shown, the dividing line between flexibility and sloppiness is dangerously narrow.

The prognosis for business history in the 1990s is a hopeful and optimistic one. There is no reason to doubt that the substantial flow of publications in journals and monographs will continue. Closer integration with economics can increase the mutual exchange of ideas, and thereby increase the number of contributors to the discipline by bringing business history into the ambit of economists and business schools. According to the theory, merger is supposed to make possible increases in productivity through economies of scale, so a little academic vertical integration should be generally welcomed.

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NOTES

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THE CHILDREN'S TOY INDUSTRY IN NINETEENTH-CENTURY BRITAIN

By K.D. BROWN

In 1806 Thomas Osler, a glass trinket maker, paid his first visit to London as a representative of the Birmingham Chamber of Commerce. While there, he later told the Select Committee on Artisans and Machinery in 1824, he was offered a contract worth £500 for the supply of dolls' glass eyes. Although he was unable to accept the work, he subsequently calculated that 'every child in the country not using a doll till two years old, and throwing it aside at seven, and having a new one annually ... the eyes alone would produce a circulation of a great many thousand pounds. I mention this', he went on, 'merely to show the importance of trifles'.[1] If the assumptions on which Osler's calculations rested were somewhat dubious, his conclusions were sound enough and they were echoed some years later by the economist J.R. McCulloch. Writing of children's toys he suggested in 1835 that 'how frivolous so ever these articles may appear in the estimation of superficial observers, their manufacture employs hundreds of hands, and gives bread to many families'.[2] Nor had such perceptions changed very much by 1876 when G.C. Bartley commented that contemporaries were 'so accustomed to fix ... attention on those articles, whose use is principally confined to persons of adult age ... that we are apt to lose sight of the fact that children too have their wants, which are to be supplied by those little trifles that we call Toys, and to ignore the extent to which their manufacture in England is carried on'.[3] Over a century later Bartley's strictures still apply. Although the artefacts themselves have proved enormously attractive to scholars and antiquarians, the industry which produced them has been virtually ignored in modern accounts of Britain's industrial past. Characteristically, only the magisterial Clapham even mentions the domestic manufacture of children's toys.[4]

Apart from the relative lack of documentation typical of most small scale industries, three other reasons suggest themselves for this oversight. First, there was the fact that for many nineteenth-century children, particularly those from poor homes or rural areas, commercially produced toys were virtually unknown luxuries. This still remained the case by the end of the century even after three decades of rising prosperity. At best, playthings consisted only of what was freely supplied by nature or what could be produced from waste materials lying readily to hand. It is noticeable, for instance, that in the vast study of children's traditional games collected by Lady Gomme in the 1890s any equipment was minimal or easily made up – buttons, pieces of stone, shaped sticks, and occasionally a ball, as often as not fashioned from a pig's bladder.[5] Robert Roberts recalled how in his Salford childhood at the turn of the century imagination and a little dexterity combined to create for him a whole world of cottages made from gas-mantle boxes. They were set among cliffs made of soda, sandy beaches composed of flour and sugar, and 'peopled ... with figures carved from pop bottle corks'.[6] His rural contemporary, Clifford Hills, made a similar point, later recalling that 'everything was made up by ourselves'.[7] Forty years before, the young Joseph Ashby watched as his mother 'pulled lead from an old, smooth leaded window-frame', softened it in the fire, and then 'made fantastic little men with it'.[8] Even among children from wealthier backgrounds there was sometimes a perverse preference for the home-made. 'A crooked stick of its own finding – the handle of a broom ... or a tin mug without a bottom, will be hoarded by a child and mused over, and converted to twenty whimsical purposes, day after day, perhaps for weeks'.[9]

Second, the British industry has been overlooked because, in the main, toys tended to be imported, especially from Switzerland, France and Germany, although supplies from the latter were often known as Holland toys because they usually came into Britain from Dutch ports. Domestic makers may have provided the bulk of the cheaper goods retailed either directly or through street vendors but even at this end of the market foreign competition was fierce, especially in small wooden toys. In general, imported goods formed the main stock of the specialist toy shops which emerged during the eighteenth century, particularly in London where both the size and wealth of the population ensured a viable if somewhat elastic level of demand. William Hamley opened his shop in High Holborn in 1760, and over the next half century the number of such retail outlets grew to such an extent that the Edgeworths were able to consider including in their 1812 treatise on education 'an inventory of the present most fashionable articles in our toy shops'.[10] One estimate suggests that between 1822 and 1834 the number of toy retailers and wholesalers in the capital increased respectively from 71 to 177 and from 13 to 95.[11] Neither transport costs nor the existence of high import tariffs – an *ad valorem* duty of 20 per cent in the 1830s – deterred this flow of European imports, worth altogether, according to McCulloch, £17,345 in 1832.[12] Indeed, so cheap were the material and labour costs that a Board of Trade Secretary told a parliamentary select committee in 1840 that 'they manufacture abroad so cheaply that to make that duty what should be a protective duty, for the purpose of increasing the manufacture of toys in this country, you would require 100 per cent'.[13] It was hardly surprising, therefore, that the reduction of the duty to 10 per cent and then its final abolition in 1853 should have encouraged further the imports which continued to form an important constituent of Britain's toy supplies throughout the nineteenth century. French exports to England, running at about ten tons in 1830, were estimated to be over 113 tons by 1850.[14] Total toy imports, worth £18,011 in 1853, had rocketed to £196,651 by 1866, and reached £714,828 by 1889. By 1913, total imports were worth £1.45 million, and one contemporary trade journal, in a fit of anti-German hysteria, claimed that German firms were supplying three-quarters of the British market.[15]

Third, it was – and is – easy to overlook the existence of the toy industry because it was very small beer compared to the industrial giants on which Britain's economic prosperity rested. A luxury toy market had existed from Restoration times, especially for dolls, and mechanical and musical novelties. Doubtless it was this market to which Cox's Museum at Charing Cross sought to appeal in charging half a guinea for admission to an exhibition of mechanical toys in 1772. Similarly, the Pierroti and Montarini families were making high class dolls in England from the eighteenth century. But in the first half of the nineteenth century rising real incomes, particularly among the middling orders of society, a greater concern with education in its broadest sense, and statutory limitations on the hours of child labour, all combined to encourage not only imports but also the domestic industry. This was further buttressed by the continuous downward social percolation of new ideas about childhood which had first emerged among Europe's élites in the eighteenth century.[16] Thus while McCulloch stressed the importance of imports in his work of 1835 he did go on to point out that 'in late years these have been made in greater abundance in England than formerly'.[17] Even so, for most of the nineteenth century official employment statistics seldom attributed more than a few hundred to toy making, and by 1907 the total value of the industry's output as it appeared in the first census of production was a mere £260,000. It is important not to be misled by such statistics, however. For one thing, the majority of toys were very cheap and a better guide would probably be provided by a measure of volume or weight. Then again, the products of the industry were extremely diverse and difficult to categorise precisely. For this reason it is possible that some output was attributed to other industries. Finally, and most importantly, the census count included only manufacturers of a certain size and ignored the contribution of the smaller units, which were still most typical of toy production. Only this can explain how the census of production could simultaneously record a total value output of £260,000 and exports valued at well over half a million pounds.[18] A more helpful statistic is that by 1900 the domestic market for toys, sports and travel goods, was worth some £7,000,000 a year.[19] Total imports at that date were worth £1,187,773 of which £54,448 were re-exported. Even allowing for the fact that these figures included sports and travel goods, it seems clear that the total production of the British toy industry by the turn of the century should be measured in millions, rather than thousands of pounds.

Nor should the industry's significance be considered solely in economic terms, for it had, and has, important sociological ramifications. Toys may have been trifles but, as the *Graphic* pointed out in

1871, this was only from 'the manufacturing point of view ... to children these trifles are a real matter of education as well as of pleasure'.[20] Bartley agreed, asserting that 'objects which we all require to use during a great part of our early life, and which have such an immense influence on us, and added so much to the happiness of our earliest years, cannot in any way be considered as unimportant'.[21] Modern sociologists make the same point, albeit in the unlovely argot of the discipline. Thus toys are deployed not only as devices of entertainment but also as 'socialising mechanisms, as educational devices, and as scaled down versions of the realities of the larger adult-dominated social world'.[22] For a variety of reasons, therefore, the British toy industry, despite its general neglect, would appear to merit some closer investigation.

II

In seeking to outline the parameters of a relatively minor British industry as it existed in the mid-nineteenth century the historian turns initially and inevitably to the decennial censuses. Numbers employed in the toy trade are set out in Table 1, but it is as well to bear in mind that the general problems of interpreting the occupational data in the censuses are particularly intractable in the case of the toy industry.[23] The census of 1831 enumerated only males over the age of 20 and while that of 1841 attempted an individual enumeration it is apparent that many women and children were missed.[24] Yet it is clear from the 1851 census, which did distinguish between the sexes, that women were heavily involved in the trade, constituting over a third of those designated as toymakers. Children were also widely employed and Charles Dickens got it right on two counts, therefore, when he gave his fictional toymaker, Caleb Plummer, a daughter to assist him in his business.[25] When Henry Mayhew investigated the trade for his *Morning Chronicle* articles of 1850 he came across numerous instances of toymakers whose only other labour input came from their wives and children. In other cases, the only employees were juveniles. This was characteristic of those engaged in making for the cheap end of the market – probably the vast majority of producers – where very small profit margins made low wage costs a necessity. One of Mayhew's interviewees, for example, a manufacturer of Bristol toys (small wooden, usually wheeled items), employed 'two boys ... one was an apprentice, a well-grown lad; the other was a little fellow, who had run away from a City institution'.[26]

Further inaccuracies in the figures came about because the enumerators described as unoccupied those who were currently unemployed. Unemployment was especially likely in a trade with a demand as elastic and as seasonal as that for children's toys. The 1841 census, for example, was taken in June, a good time for makers of the small toys and fancies sold at fairs, but a bad time for more substantial items. Once

TABLE 1
THE TOY MAKING POPULATION OF BRITAIN*

Occupation	1831	1841	1851	1871	1891	1911
Toy Dealers						7672
Toy Makers	1139	1866	2539	2502	6776	11152
Ball & Bat Makers		97	294	439		
Figure & Image Makers		287	378	187	383	
Fishing Rod Makers		229	376			
Mask Makers		10				
Modellers		381	583	336		
Pewterers		321		289		
Wax Modellers		34	56			
Total	1139	3225	4226	3753	7159	18824

*1831–1911.
Source: *Census of Great Britain* (P.P. 1844, XXVII), pp.31–43; *Census of Great Britain* (P.P. 1852–53, LXXXVIII), pp.cxxxii–cxliii; *Census of England and Wales for the Year 1871* (P.P. 1873, LXXI), pp.81–8; *Census of England and Wales for 1891* (P.P. 1893–94, CVI), pp.xxviii–xxxi; *Occupations and Industries* (P.P. 1913, LXXVIII), pp.4–32.

again, Mayhew's interviewees provided quite a lot of commentary about the fragile nature of the business and its vulnerability to the seasons, the weather (which affected the demand for outdoor toys) general economic conditions, and fashionable whim. 'When the labouring people are out of employ', one toyman told him, 'I feel it in my business'.[27] Similarly, several of the people to whom Mayhew talked made reference to the deleterious effects of the progressive reduction of the import duties. One told him that 'the introduction of French and foreign toys, at the reduced rate of duty has effected me a wonderful sight. This lamb can't be made in London for a penny, but it's brought from Germany and sold here retail at a penny'.[28]

In addition to the general problems involved in interpreting the census material, the historian of the nineteenth-century toy industry is further hampered by semantic difficulties. The word 'toy' had then a wider meaning than that now more usually assigned to it. It was most commonly employed to describe buttons, buckles, pins, brooches and other trinkets of glass, metals, and ivory, designed primarily for adults. It was from the success of this industry that Birmingham derived its claim to be 'justly styled the toy shop of Europe' and the small manufacturing enterprises on which it was based have been adequately described elsewhere.[29] Part of the output of this industry consisted of knick-knacks designed for adult drawing rooms, but little models of sedan chairs, cooking utensils, furniture and so on, were easily turned to the amusement of children, even though they had not been designed for play at all.[30] Not surprisingly, therefore, contemporaries were not always as careful as McCulloch to define precisely what they meant by toys – 'every trifling article made expressly for the amusement of children' – and this can lead the unwary astray.[31] There was certainly some confusion apparent in the mind of Henry Mayhew. He was discussing children's toys when he wrote that the greatest number of toymakers were to be found in Warwickshire.[32] Now it is certain that there were some toymen in the county whose main output was directed at children. But it is equally clear, however, from the details in the 1841 census on which he relied, that most of the individuals to whom he referred were workers in ivory, bone, gilt and the other materials associated with the traditional, adult, toy industry. Later censuses may not suffer from this problem since according to one authority, this side of the industry was virtually moribund by 1860.[33]

A further complication arises from the very nature of the toy trade itself. Toys were a highly heterogeneous commodity, as the *Business Directory of London*, which appeared in 1864, recognised. Among the 46 toymakers it listed were pewterers, as well as manufacturers of drums, tambourines, dominoes, india rubber, tinware, swings, and kites. It further instructed readers in search of toy makers to look under headings as diverse as balls, backgammon boards, dolls, fishing rods, magic lanterns, puzzles, and rocking horses.[34] Almost certainly, therefore, some of the individuals described in the early censuses as bat and ball makers, fishing rod manufacturers, pewterers, tinplate workers and so on, were making toys for children as well as producing for adult use.

A particular problem concerns the occupation of woodcarver. Small wooden toys were imported at very competitive prices but this was not true of bulky and heavy items such as rocking horses and dolls' houses. Their manufacture, therefore, constituted one of the main sectors of the British industry at mid-century. Probably this was why a wooden rocking horse symbol was chosen to represent the industry on the map of industrial distribution which was published along with the 1851 census. It is thus significant in this context that W.H. Cremer, one of the major British toymen in mid-century, specialised in wooden items such as rocking horses and dolls' houses. Writing later of the many toys she acquired as a child, Eleanor Farjeon recalled, for example, that 'above all ... Dobbin came to us from Cremer's ... two simple green rockers, and a brown-hair coat'.[35] Accordingly, while by no means all of those described in the censuses as woodcarvers could have been toy makers, it would seem reasonable to assume that some proportion of the 1,341, 2,387, and 3,555 noted respectively in the census enumerators' returns for 1851, 1871 and 1891, should be added to the totals for toymakers.

Similar allowance probably needs to be made for those described as fancy goods makers and dealers. There was a fine dividing line between toys and the cheap paper or textile novelties that were included under the umbrella term of fancy goods. When a trade press emerged in the late nineteenth century the close connection was recognised in titles such as the *Fancy Goods and Toy Trades Journal* and the *Toy and Fancy Goods Trader*. Many of the traders described by Thomas Wright at Greenwich on Easter Monday in 1868 dealt both in toys and fancy goods. There were, noted Wright, 'troops of the ragged, importunate toy merchants, who sell "jolly noses", dolls, paper wreathes, and the other grotesque sundries with which it is the want of many young cocknies to adorn themselves when "outing" on such occasions'.[36] Some of the 8,836 described as fancy goods manufacturers and dealers in the 1871 census would more properly be categorised as involved in the toy trade, thus further inflating the figure for that year.

Given, therefore, the general problems of the early occupational censuses, the semantic difficulties, the very heterogeneous nature of the toy trade, and the problems of demarcation between occupations, it is impossible to arrive at any accurate estimate of the numbers involved in the first three-quarters of the century. That the early counts are underestimates seems incontrovertible, especially when it is borne in mind that McCulloch and Osler talked respectively of a trade employing 'hundreds of hands' and worth 'a great many thousand pounds'.[37] Even the 1871 census, certainly more reliable and sophisticated than its forbears, was not entirely free of difficulties, and its figures, too, were probably on the low side. They were certainly much lower than Levi's contemporary estimate of 22,800 toymakers and woodcarvers in England, although this was inflated by his inclusion of the Warwickshire toymen.[38] The 1911 census was relatively free of many of the ambiguities of job definition, and gave a figure of almost 19,000. This was probably fairly accurate, although even then it is possible that some of the 12,466 woodcarvers, 18,005 pewterers, and even 2,017 workers in celluloid (used in cheap doll making) might have been producing for children. There can be little doubt that the 1911 figure did reflect some expansion of employment in the toymaking industry, but to some extent that growth was more apparent than real, reflecting the underestimates of earlier surveys.

Levi's inclusion of Midland makers in his 1867 estimate was not totally without foundation because by that date some of them were undoubtedly producing mainly for children. Mayhew was told that tin slop toys – penny horses and carts of tin made with machinery by children – were made in Birmingham, where glass eyes for dolls were also manufactured.[39] A few years later, another Black Country firm, T. & C. Clark and Co., had a sufficient output of toy cannons from its Shakespeare Foundry at Wolverhampton to seek some protection by means of a registered trade mark.[40] On the whole, however, the children's mid-century trade, both manufacturing and retail, was concentrated in London. This at least can be deduced from the fact that just under a half of those described as toymakers and dealers in the 1841 census were located in the capital, particularly in East End parishes like Shoreditch, Bethnal Green, and St. Lukes.

It seems likely that here lived the majority of what, according to the reports issued by the commissioners on the Great Exhibition of 1851, was the most common category of toymaker. These were the poor, self-employed chamber masters who seldom manufactured items to order, but rather 'when they have produced a small number, hawk them about the streets. Without capital, and compelled to work almost literally from hand to mouth, they continue to exist only, without any material advance ... making much the same kinds ... one year after another'.[41] There was some specialisation in the sense that such makers typically concentrated on producing particular types of toys – moving novelties, Bristol toys, dolls, toy guns – or on using particular types of materials. Mayhew interviewed specialist workers in wood, pewter, wickerwork, and paper, for instance. Their products were cheap, usually retailed for pennies by street vendors catering for the lowest end of the market. Since they thus depended quite extensively on impulse buying they were particularly vulnerable to the trade depressions which affected employment levels among the working classes. Such makers, one High Holborn toy shop owner told Mayhew, 'cut one another's throat for want of combination. I know the workmen do, I tell them so. They starve in trying to outdo one another in cheapness, which injures them and is no benefit to the tradesman'.[42]

A second group comprised those who, like the garret masters, worked at home, but who sometimes – in some cases always – produced to order for a particular toymaster or retailer. Some of these were little more than sweated workers, making only parts for middlemen who assembled the finished items elsewhere. Mayhew instanced the trade in sewed dolls. The composition heads were made at his dwelling place by an individual whose 'whole appearance showed grinding poverty. His cheeks were sunk ... and altogether he seemed, from grief and care, like a man half dead'.[43] Once the heads were completed they were taken away to be painted. The eyes came from Birmingham and the clothes were knitted by women who also worked on a putting out basis. Other makers were more fortunate in that, while they worked at home, they were retained by particular wholesalers or retailers to produce a wide range of goods. Such was Dicken's Caleb Plummer, whose output for the merchants, Gruff and Tackleton, included 'dolls, Noah's Arks, melancholy little carts ... small fiddles, drums, no end of cannon, shields, swords, little tumblers in red breeches, boats of all sorts ... dozens upon dozens of grotesque figures'.[44]

Tackleton appears to have been a fictional equivalent of W.H. Cremer, who had two substantial retail outlets in Regent Street and Westminster. As well as buying in from small makers, however, Cremer was also a direct employer of labour, operating his own manufacturing premises, and there was a factory or proto-factory side to the industry as well. Factory is certainly too grand a description of the small workshops that were typical. Of the two manufacturers of dolls' eyes, for example, one employed two men, the other six. But for those journeymen who worked in the largest of such enterprises wages could be very much higher than the incomes commanded by the independent garret masters and sweated workers. Mayhew quoted sums of 30 shillings a week, while almost twenty years later Levi commented that the average male wage was 35 shillings.[45] This was 'unusually high', he wrote, but rested on the fact that such workers 'require consummate skill and precision'.[46]

The products of these factories were, of course, aimed at a different, higher-class market than that catered for by the self-employed workmen. At the very apex of the manufacturing network stood an élite group of highly skilled master craftsmen who produced expensive toys of the very highest quality. A few of these were foreign manufacturers like the Montarinis and Cremer (son of a skilled woodcarver from Germany). Among Mayhew's interviewees was a Frenchman who was unique in turning out hair-covered papier-mâché animals which sold for as much as £5.00 each. He employed eight women and girls in his own workrooms, undertaking himself the highly skilled process of dressing the animal skins from which the coverings were produced. An Italian who claimed to be the only maker in Britain of detonating crackers found the business so commercially successful that he was able to acquire a parlour full of 'old foreign paintings, religious, mythological, or incomprehensible, unmistakable Hogarth prints'. An English maker of top quality magic lanterns estimated that his annual income could reach almost £1,470 while a manufacturer of toy theatres had obviously done just as well in his long career which had started in 1811. 'He sat', recorded Mayhew, 'in a huge armchair, embedded in blankets, with a white night-cap on his head'. At his peak he had made £30 a week, by turning out as many as 50 items, the most expensive of which sold at £20. A High Holborn man who made speaking dolls was able to charge six guineas a time.[47]

It was almost exclusively from the larger workshops and the skilled élite that the few British toys of any real quality derived. They also provided the basis of a limited export trade. Although the French were generally acknowledged to be the most skilful doll makers, the British excelled in wax doll manufacture, exporting to Europe and the United States from the 1840s. Most of the exports were confined to those branches of the trade associated most closely with the traditional toy industry. Birmingham-made glass eyes, for example, went to America, a country whose indigenous toy industry only began to emerge in the 1850s.[48] Nevertheless, by 1870 the export of British toys was worth almost £100,000.

On the whole, however, large sectors of the British trade were not very price competitive in the middle of the nineteenth century, a situation which many of Mayhew's interviewees attributed to relatively low labour costs in Europe. A maker of Bristol toys, for example, commented that 'if people, even girls and boys, are paid anything abroad for making such toys, it must be next to nothing. How they who depend upon such work live at all, is a puzzle to me'.[49] But such little evidence as exists for the mid-nineteenth century trade appears to indicate that wage differentials were relatively slight. At least, in 1847 the average daily wage of male toy workers in Paris was 2/8d. rising to 4/9d. for the highly skilled, while London workers, according to Mayhew, could expect to earn between 3/- and 3/6d. a day.[50] Clearly, it would be unwise to read too much into these figures, especially as it is by no means clear that the two sources are referring to similar categories of workers, but it may be that the European advantage lay less in wages than in materials, product quality, and in the organisation and scale of the industry.

At this cheap end of the wooden toy market British makers could hardly compete with the German equivalents which were, to borrow Clapham's picturesque phrase, products 'of a hard living peasantry's winter evenings'.[51] The mass production of cheap wooden items was a useful supplement to peasant income during the winter, particularly in a country possessed of so abundant an afforestation that as late as 1871 whole pine trunks could be purchased for as little as twopence each. All that was required then was a cheap lathe. The maker sold the resulting figures at a halfpenny, and another halfpenny covered both the transport costs and salesman's markup.[52] Similar British goods had to be made from imported timber and thus the only domestically produced wooden goods which had any degree of protection from foreign competition were larger items which were neither mass produced nor cheap to transport. In other sectors of the toy trade German producers enjoyed the commercial advantages accruing from long establishment. Nuremberg had been a centre of toy production since the fifteenth century with the result that specialisms and marketing networks were all well established to take advantage of the growing demand for toys which appeared in eighteenth-century England. Already by 1800, for example, some of the specialist producers of tin toys were deploying commercial travellers throughout Europe. The French, who had also a long established reputation for luxury items, captured other parts of the British market. Their mechanical toys were popular, partly because of their inherent quality, partly because the scale of their production cheapened costs. One retailer told Mayhew that in his opinion the French 'surpass the skill of the English workman. I am convinced, indeed, that the English toy-maker can hardly so much as repair a broken French toy. Few watch-makers here can repair a clock-work mouse; they will generally charge 2/6 for repairing a mechanical mouse which I sell new for 3/6d'.[53] Although Britain had some relatively large scale producers, notably in those few areas such as wax doll making and heavy wooden toys where they did compete successfully, the Germans and the French had more. Paris in 1851 had 62 toy makers who each employed more than ten workers, for example.[54] In 1867 the *Illustrated London News* noted that Monsieur Andreux, a Parisian maker of military toys, had 40 workmen in his employ. The same paper reported that a Monsieur Dessin employed 50 people to convert old tin – some of which was imported from England – into cheap tin toys. His cheapest toy, a train consisting of a locomotive, tender, and one carriage, sold for twopence halfpenny, a price which the awarding jury at the Paris Exhibition found hard to credit.[55]

But whether it was due to unfavourable wage or material costs, poor product quality, or inadequate economies of scale, the general lack of competitiveness of the British industry in mid-century was clearly evident from its performance at national industrial exhibitions. Although at the Great Exhibition of 1851 there were 21 British exhibits in class XXIX, manufactures relating mainly to amusements, the official report commented that 'as the great part of their productions consists of large models and other objects, the United Kingdom is scarcely represented in Toys properly so-called ... none of the ordinary strong toys of English manufacture are contributed'.[56] No British toy makers were represented at New York in 1853 and while 39 British-based exhibits did appear in the toys and games section of the 1862 London Exhibition, 11 of them were sports goods manufacturers and six presented parlour games which were not aimed solely or primarily at children. George Augustus Sala reckoned that only one British toy-maker of any significance, W.H. Cremer, took part in the Paris Exhibition of 1867.[57]

While this exhibition was on, the *Illustrated London News* commissioned George Bartley to report on the toy exhibits. Ten years later the same individual contributed a chapter on the toy business to G.P. Bevan's general survey of British industry. That toys should even be included in their own right was perhaps a measure of the changes which Bartley noted. 'The manufacture of toys has long ceased to be carried on exclusively on a small scale ... a considerable amount of intelligence, capital, and skill have been brought to bear on this industry'.[58] There was something of the prophetic as well as the historic in his words, for the last quarter of the nineteenth century did see several significant changes in the domestic industry. This was a period when markets were changing rapidly. In part this was linked to the contemporary concern with educational reform which stimulated a renewed interest in the role of the toy as educator. As a trade paper commented, 'one of the signs of the times is the every increasing demand for toys with an educational tendency'.[59] But change owed most to the expansion of international trade which took place on the back of falling manufacturing and transport costs. In Britain real incomes experienced a virtually uninterrupted rise. This, coupled with a declining birth rate, especially among the middle classes, freed more income for expenditure on non-essentials. One response to this was the commercialisation of leisure. Another was the boom in the demand for toys. This, as we have seen, encouraged the continued growth of foreign imports, prompting E.E. Williams to warn in 1896 that 'to a large and ever increasing extent, our children's playthings ... are made in Germany'.[60] As the import figures suggest, such a claim was not entirely without foundation, the total value of toy imports reaching £1,350,000 by 1912.[61] But in common with other contemporaries Williams greatly overestimated the extent of German import penetration, and his polemical purposes led him to exaggerate wildly, claiming, for instance that the London toy industry was 'well nigh at the point of death'.[62] Such gloomy reports have not misled later writers. 'For toys', noted Marghanita Laski in 1964, 'this was a golden era ... the English toy industry began to make headway'.[63] In virtually identical vein Antonia Fraser commented that 'by the end of the nineteenth century the English toy industry began to make some headway'.[64] 'The commercial ramifications of the Victorian and Edwardian toy industry', remarked another recent authority, 'were enormous'.[65] What changes had occurred since the 1870s to prompt such comments?

There was first of all, change within the labour force. Although, as has been suggested above, the increase in employment recorded by the census of 1911, was more apparent than real, there had clearly been some expansion since the mid-nineteenth century. In the 1830s McCulloch had written in terms of an industry employing many hundreds, whereas by the late 1870s P.L. Simmonds was able to refer to 'many thousands of people ... employed in this country in making rocking horses, dolls, and other toys'.[66] This increase was accompanied by a considerable dispersion of the industry from its earlier concentration in London and the west midlands. It may have been this which prompted Williams's pessimism, although according to the 1911 census the capital, with 5,131 makers and dealers in instruments and toys, still housed slightly more than a quarter of the national total. The three midland counties of Warwickshire, Worcestershire, and Staffordshire, which between them had 3,787 toy makers and dealers, also remained prominent. They, of course, were the locus of the old traditional toy trades but a good number of the producers were now making for the juvenile market. Lancashire and Yorkshire, respectively with 1,887 and 1,355 makers and dealers, had both emerged as main centres of production.[67] This was reflected in contemporary reference books. The

Harmsworth Encyclopaedia, for example, listed six main areas of toy specialisation in Britain. Two of these were in the Midlands, one in Yorkshire, and one in London.[68] Although its claims to comprehensiveness may be doubted, the four most frequently represented regions among the 2,238 entries in Tattersall's *Directory of Manufacturers and Wholesalers in Toys and Fancy Goods* (1913) were London, the three midland counties, Yorkshire and Lancashire. It was equally noticeable from Tattersall that most major centres of population now had several toy dealers whereas half a century earlier most had had but one or two. By 1913 Bradford had 14, Nottingham and Liverpool 10, Bristol 7, and Brighton 4, for example.

The second major development after 1870 was the emergence of more large scale units of production. Of course, these were not unknown earlier in the century. The largest doll-making enterprise in the country was turning out 20,000 figures a week in 1871.[69] It seems certain that both it and the toy theatre manufacturer who, noted Bartley in 1876, was producing 20,000 items a year, had been established for many years. Bartley also mentioned three sizeable pewterers in London, one of whom, George Bull, worked in a business established 70 years earlier by his father, and which currently consumed a ton of metal a month.[70] Yet the indications are that larger scale enterprises were becoming more common by the end of the century. Model boat making prospered from the 1870s onwards and the most substantial maker in London employed at least 15 individuals in 1876 to turn out 10,000 vessels a year.[71] The Whitney Co. was founded in 1875 to make model engines, especially for the boats. When the New Eccles Rubber Works was established in 1895 its premises covered 10,250 square yards, and while its main output was bicycle tyres, the firm's products included balls and rubber toys. Although Booth calculated that in 1891 the ratio of employers to employees in the London trade was one to seven, he also drew attention to the development of larger scale enterprises, observing that the capital had two or three toy factories which each employed between 30 and 40 people.[72] One of the most prominent of these must have been the firm of William Britain. Britain had initially been a maker of mechanical toys but in the early 1890s one of his sons, William junior, perfected a new and cheaper method of making lead soldiers. The firm was so successful with its new product that new premises were opened in 1895. According to one report, the new factory occupied 'several floors' on which were occupied 'scores of busy men, lads and lasses'.[73]

William Britain's success was based on a new method of casting which, because it left the figures hollow, greatly reduced the amount of metal used in each figure. He was thus a prime example of another trend apparent in the late nineteenth-century industry – the willingness to experiment with new ideas. Of course, there was still much conservatism of the sort that is sometimes thought to have characterised British entrepreneurship at this time. Writing of doll makers, E.E.

Williams referred to their 'conservatism ... in the matter of wax' because they preferred to stick with this traditional material even though it was breakable, scratchable, and not washable.[74] Similarly, the reverence for wood died hard. A popular book of 1899 reflected this when it claimed that 'wooden toys are far more interesting than those made of metal, having more expression, more colour and more of everything else into the bargain ... In fact in every way the penny wooden toy is as superior to the sixpenny metal one, as the Wooden Warship "Victory" is to M.S. Horrible Ironclad'.[75] But, as William Britain showed, there was also a new dynamic apparent in the industry, even in the uses to which traditional materials were put. British toy boat builders had been gaining a reputation since the 1870s when 'in London a trade has sprung up which to the well to do abolishes the use of the boy's clasp knife in the occupation to which he most loves to put it – the cutting out of his model ship. Beautiful specimens of craft from the boat up to a three master can now be purchased in the shops, with all the proper fittings'.[76] Another new development in the 1870s was 'steam engines beautifully made and designed to bring up young engineers'.[77] Messrs Laing perfected a process of stamping out toys from sheets of vulcanised rubber. Britains produced their new soldiers by the thousand and *Athletic Sports Games and Toys* commented that they had succeeded in ousting the Germans from a trade which they had long dominated. Britains 'by their pluck and enterprise have shown what can be done in this country in toy making'.[78] It was another British manufacturer, Bassett Lowke, who in 1901 produced the first high quality, scale toy steam locomotive to run on standard gauges. In the same year Frank Hornby took out a patent for his Mechanics Made Easy which in 1907 was renamed Meccano. A new modelling material, Harbutt's plasticine, began to appear from the Chad Valley works and if it was the German, Margaret Steiff, who dominated the soft toy industry, it was English bears which began to growl in 1908.

This new dynamic was reflected in a steady growth of toy exports and re-exports from Britain. It is difficult to gauge this accurately since toys were not separately enumerated between the early 1870s and 1900. Exports in 1867 were valued at £85,258. Re-export of foreign toys was worth £36,124 in 1876.[79] When toys were separately enumerated again in 1900 the value of exports was put at £351,675.[80] By 1914 this figure had more than doubled to reach £836,636. Although the annual value of re-exports varied considerably, it averaged £89,000 between 1908 and 1912. The main market for British products was provided by the empire, especially Australia, South Africa, and India, but inroads were also being made into other, perhaps more competitive, areas. Bassett Lowke produced a French catalogue in 1904 and had agents in both France and Holland. Frank Hornby had an office in Berlin which controlled the export of Meccano to Germany, the Hapsburg Empire, Russia, and eastern Europe. Britains exported model soldiers to Germany, opened a factory in France early in the twentieth century, and also sold in America. It was claimed that by 1914 the British toy industry had become a serious challenger to France and Austria for second place in the American market and certainly the United States had become Britain's second largest market in 1912.[81]

The development of the export trade, the technological innovations, and the growth in the scale of the industry, were all well publicised in a flourishing trade press, whose very emergence was itself indicative of the more aggressive and adventurous commercial spirit apparent in the toy business. Every significant industry, wrote Whitfield Crofts, editor of one of the first of the numerous periodicals which appeared, had a trade journal, but hitherto toymakers had been unrepresented. The time had come, he continued, to establish such an organ in recognition of the fact that 'the trade in this country of toys alone is very large and steadily increasing. Within the last ten or a dozen years these trades have assumed big proportions and the market was never so active as at present'.[82] *Athletic Sports, Games and Toys* and the *Fancy Goods and Toy Trades Journal* both first appeared in the early 1890s. *Games, Toys and Amusements* challenged them briefly from 1895 before its demise in 1897. Much more successful were the *Toy Trader and Fancy Goods Review* which began in 1909 and *Games and Toys* which followed in 1914. All were unashamedly jingoistic. Giving a puff to Messrs Turnbull, as the 'largest toy warehouse in the country', *Athletic Sports, Toys and Games* observed that 'a very pleasing feature of the business is that they do their utmost to encourage the sale of English-made toys'.[83] Foreign products were attacked, as in the following passage from the *Fancy Goods and Toy Trades Journal*:

> The toys made in Franconia are chiefly metal. Though cheap, these toys are not in very great favour, owing to their being easily broken, and their brilliant colours very often tempt children to suck them, to the great and reasonable horror of all parents, who have heard of the poisonous qualities of many of the most showy pigments. The leaden soldiers, in the form of companies of soldiers on a very rapid march, judging from the extensive projection of their right legs, are chiefly made in Prussia.[84]

Perhaps this is what Whitfield Crofts had in mind in his inaugural editorial when he said that while he intended to 'encourage in every way the manufacture of British-made playthings ... the makers of toys and games in Germany, France and other countries will receive important treatment'.[85]

A similarly patriotic sentiment appears to have lain behind the attempts made in 1913 to establish a trade association. At least, it was proposed to call it the All British Toy Manufacturers Association, the very title indicative of the vigour with which British manufacturers had responded to the challenges of foreign competition. Certainly, it remained true that the domestic market was still dominated by imports as it had been in McCulloch's day. Conservatism was still evident and it was still also the case that large parts of the industry were small scale, traditional, domestic, sweated, and highly localised as they had been in the middle of the nineteenth century. But in other ways the three or four decades before the war saw crucial changes that were to pave the way for a thriving twentieth-century industry. New scales of operation, labour expansion, diversification of locale, innovation in the use of materials, and variety of product, all served to give the industry a very different appearance to that described by Mayhew in 1851. They further suggest that here is yet another late nineteenth-century British industry in which entrepreneurial flair was far from dead. At the very least, it seems an industry whose history could profitably be further explored.

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NOTES

1. *Fourth Report from the Select Committee on Artisans and Machinery* (P.P. 1824, V), p.314. One of Henry Mayhew's interviewees subsequently claimed that McCulloch got this wrong but the evidence of the parliamentary paper seems fairly conclusive. H. Mayhew, *The Morning Chronicle Survey of London and the Poor of The Metropolitan Districts. Vol. 3. Letter XXXVIII* (1981 reprint), p.241.
2. J.R. McCulloch, *A Dictionary, Practical, Theoretical, and Historical of Commerce and Commercial Navigation* (1835), p.1168.
3. G.C. Bartley, 'Toys', in G.P. Bevan (ed.), *British Manufacturing Industries* (1876), p.154.
4. J.H. Clapham, *An Economic History of Modern Britain: Free Trade and Steel, 1850–1886* (Cambridge, 1967), p.14.
5. A.B. Gomme, *The Traditional Games of England, Scotland and Ireland* (New York, 2 Vols., 1894 and 1898).
6. R. Roberts, *A Ragged Schooling* (1978), p.30.
7. T. Thompson, *Edwardian Childhoods* (1981), p.44.
8. M.K. Ashby, *Joseph Ashby of Tysoe, 1859–1919* (Cambridge, 1961), p.13.
9. A. Bain, 'On Toys', *Westminster Review*, Vol. 37 (1842), p.99.
10. M. and R.L. Edgeworth, *Essays on Practical Education* (1812), p.46.
11. D. Alexander, *Retailing in England during the Industrial Revolution* (1970), pp.239–55.
12. McCulloch, *A Dictionary*, p.1168.
13. *Select Committee on Import Duties* (P.P. 1840, V), p.124.
14. *Great Exhibition of 1851. Reports of the Juries and Royal Commissioners* (1852), p.1519.
15. The trade figures are available in the Annual Statements of Trade published in *British Parliamentary Papers*. The claim about the German dominance of the British market was made in *Toy and Fancy Goods Trader* (August 1914), p.246.
16. For changing concepts of childhood see J.H. Plumb, 'The New World of Children in Eighteenth-Century England', *Past and Present*, Vol. 67 (1975); J. Grange, 'Histoire du Jouet et d'une Industrie', in R. Jaulin (ed.), *Jeux et Jouets* (Paris, 1979), p.264; P. Ariès, *Centuries of Childhood* (1962).
17. McCulloch, *A Dictionary*, p.1168.
18. *Final Report on the First Census of Production of the United Kingdom* (P.P. 1912–13, CIX), pp.809–11.
19. A.R. Prest, *Consumer Expenditure in the United Kingdom, 1900–1919* (Cam-

bridge, 1954), p.159. This estimate includes sports and travel goods as well.
20. *Graphic*, 16 Dec. 1871.
21. Bartley, 'Toys', p.200.
22. D.W. Bell, 'Towards a Sociology of Toys: Inanimate Objects, Socialisation, and the Demography of the Doll World', *Sociological Quarterly*, Vol. 8 (1967), p.447.
23. The general difficulties of interpreting occupational data are simply and clearly set out, for example, by J. Bellamy, 'Occupational Statistics in the Nineteenth Century Censuses', in R. Lawton (ed.), *The Census and Social Structure* (1978), pp.165–78.
24. D.J. Coppock, 'The Climacteric of the 1890s: A Critical Note', *Manchester School*, Vol. 24 (1956), pp.5–6.
25. C. Dickens, *The Cricket on the Hearth* (1846).
26. Mayhew, *Morning Chronicle*, pp.217–18.
27. Mayhew, *Morning Chronicle*, p.218.
28. Mayhew, *Morning Chronicle*, p.219.
29. The comment was by L. Levi, *Wages and Earnings of the Working Classes* (1867), p.vii. For works on the traditional toy industries see Maxine Berg, *The Age of Manufactures, 1700–1820* (Oxford, 1985). See also W.H.B. Court, *The Rise of the Midland Industries, 1600–1838* (1938); B. Taylor, 'York in the Second Half of the Eighteenth Century – Expanding, Stagnant, or in Decline?' (unpublished MSc thesis, University of York, 1988); M. Rowlands, *Masters and Men in the West Midland Metalware Trades before the Industrial Revolution* (Manchester, 1975). The output of potteries was sometimes referred to as 'toys' as well. Charles Shaw, who worked at a pottery in the 1840s, recalled that 'the figure of Napoleon Buonaparte was the leading article of our industry at this toy factory'. C. Shaw, *When I Was a Child* (Firle, Sussex, 1903 reprint), p.125.
30. This point is discussed more fully in Ariès, *Centuries*, pp.66–8.
31. McCulloch, *A Dictionary*, p.1168.
32. Mayhew, *Morning Chronicle*, p.207.
33. G.C. Allen, *The Industrial Development of Birmingham and the Black Country, 1860–1927* (1929), p.17.
34. *Business Directory of London* (1864), pp.668–9.
35. E. Farjeon, *A Nursery in the Nineties* (1935), p.312.
36. T. Wright, *The Great Unwashed* (1970 reprint), p.239.
37. See notes 1 and 2.
38. Levi, *Wages and Earnings*, p.54.
39. Mayhew, *Morning Chronicle*, p.244.
40. G. White, *Antique Toys and Their Backgrounds* (1971), p.220.
41. *Great Exhibition of 1851*, p.1521.
42. Mayhew, *Morning Chronicle*, p.208.
43. Mayhew, *Morning Chronicle*, p.238.
44. Dickens, *Cricket on the Hearth*, pp.59–60.
45. Mayhew, *Morning Chronicle*, p.240.
46. Levi, *Wages and Earnings*, p.54.
47. These examples are from Mayhew, *Morning Chronicle*, pp.221–49.
48. For the American industry see C.M. Depew (ed.), *One Hundred Years of American Commerce* (New York, 1968 reprint), p.661.
49. Mayhew, *Morning Chronicle*, p.219.
50. For the French figures see *Great Exhibition of 1851*, p.1519.
51. Clapham, *Economic History*, p.14.
52. Graphic, 16 Dec. 1871.
53. Mayhew, *Morning Chronicle*, pp.207–8.
54. *Great Exhibition of 1851*, p.1519.
55. *Illustrated London News*, 2 Nov. 1867.
56. *Great Exhibition of 1851*, pp.1520–21.
57. G.A. Sala, *Notes and Sketches of the Paris Exhibition* (1867), p.151.
58. Bartley, 'Toys', p.199.
59. *Games, Toys and Amusements* (May 1895), p.34. Similar comments were made by

P.L. Simmonds in *Fancy Goods and Toy Trades Journal*, 9 March 1891.

60. E.E. Williams, *Made in Germany* (Brighton, 1973 reprint), p.110.
61. *Annual Statement of the Trade of the United Kingdom, 1912* (P.P. 1913, LX), pp.220, 237, 364.
62. Williams, *Germany*, p.111.
63. M. Laski, 'Domestic Life', in S. Nowell Smith (ed.), *Edwardian England, 1901–1914* (1964), p.202.
64. A. Fraser, *A History of Toys* (1966), p.209.
65. J. Walvin, *A Child's World: A Social History of English Childhood, 1800–1914* (Harmondsworth, Penguin edition, 1982), p.99.
66. *Reports of Her Majesty's Commissioners for the Paris Universal Exhibition of 1878* (P.P. 1880, XXXIII), p.229.
67. *Census of England and Wales 1911. Occupations* (P.P. 1913, LXXVIII), pp.46–266.
68. *The Harmsworth Encyclopaedia*, Vol. X (1906), p.233.
69. *Graphic*, 16 Dec. 1871.
70. Bartley, 'Toys', p.174.
71. Bartley, 'Toys', p.186.
72. C. Booth, *Life and Labour of the People in London. Second Series: Industry*, Vol. 2 (1903), pp.54–69.
73. *Games, Toys and Amusements* (Oct. 1895), p.7. For Britain see my article, 'Models in History: A Micro-Study of Late Nineteenth-Century British Entrepreneurship', *Economic History Review*, 2nd series, Vol. XLII (1989). None of this should obscure the fact that small scale production still continued. The youthful Charlie Chaplin, for example, learned boat making from two itinerant Glaswegians who for an outlay of a shilling on glue, tinsel, old shoe boxes, wood, twine, and Christmas paper, were able to make seven dozen penny boats. C. Chaplin, *My Autobiography* (1964), pp.62–3.
74. Williams, *Germany*, p.114.
75. *Gordon Craig's Book of Penny Toys* (1898).
76. *Graphic*, 16 Dec. 1871.
77. *Graphic*, 16 Dec. 1871.
78. *Athletic Sports, Games and Toys* (March 1896), p.9.
79. *Reports of Her Majesty's Commissioners for the Paris Universal Exhibition of 1878*, p.229.
80. *Annual Statement of the Trade of the United Kingdom for 1900* (P.P. 1901, LXXVI), pp.532–3.
81. *Toy and Fancy Goods Trader* (June 1914), p.136.
82. *Games, Toys and Amusements* (April 1895), p.1.
83. *Athletic Sports, Toys and Games*, 9 Feb. 1896.
84. *Fancy Goods and Toy Trades Journal*, 9 March 1891.
85. *Games, Toys and Amusements* (April 1895), p.1.

ENGLISH BANK LENDING AND THE FINANCIAL CRISIS OF THE 1870s

By MICHAEL COLLINS*

There has long been a deep interest in the relationship between finance and industry in Britain before World War I. It is both an issue that occupies a prominent position in the analysis of the role of ruling élites[1] and a major area of concern in the debate over the UK's alleged relative industrial retardation from the last quarter of the nineteenth century.[2] It is a debate that directly concerns the efficiency of financial market allocation and the relative importance of institutional constraints in inhibiting economic growth.[3] It is fair to say, though, that this high degree of interest has not always been met by a commensurate effort in terms of research on relevant archival material. With a few notable exceptions most studies have adopted a schematic rather than source-based approach. Recently a number of scholars have begun to broaden the empirical base needed for a proper assessment of the adequacy of the supply of financial services in the pre-1914 period and, of course, business historians have occasionally unearthed evidence from the point of view of the industrial users of such services.[4] Nevertheless, knowledge of the precise nature and degree of involvement by British banks in the provision of industrial finance is still rather obscure, with assessments and judgements often conjectural and based on secondary information.

This paper offers a contribution in this respect by focusing on the archival records of one of the main financial institutions – the commercial banks – during the 1870s.

There is a general belief that by the early twentieth century the deposit banks did not provide long-term industrial finance to any significant degree. Contemporary bankers emphasised the liquid nature of their assets stressing the need to maintain public confidence,[5] and the little information from the few accounts that were published gives the same impression. Goodhart's work on the internal records of a number of the London clearing banks confirmed this view of highly liquid asset holdings.[6] However, while Goodhart's work is exceptional in that it offers empirical analysis of the composition of bank assets, his intent was to deal only with broad categorisations ('advances', 'investments', and so on) and he has very little to say directly on industrial lending. He attempts no analysis of the liquidity and duration of loans, nor of the type of borrower (although he does confirm the absence of domestic industrial securities within the banks' portfolios). Despite this absence of detailed historical analysis the consensus persists; it is generally accepted that deposit banks were not significant suppliers of industrial finance.

Explanations for this perceived lack of bank involvement in industrial financing can be usefully divided between those that emphasise demand and those that stress supply. On the demand side, it is commonly argued that the typical industrialist did not actively seek medium- and long-term financing from financial institutions.[7] Even by the early years of the twentieth century, of course, most manufacturing concerns in Britain operated on a relatively small scale. Many were family-owned and family-run businesses that financed most investment requirements from accumulated profits or – if required – from funds raised from private, non-institutional sources (such as friends and acquaintances).

It has been argued by a group of commentators – who perhaps could be labelled 'optimists' – that the means by which financial markets responded to this muted demand for outside funds was both competitive and adequate. Michael Edelstein and Ranald Michie, especially, have strongly suggested that the course of development of services within British financial markets was demand-driven. To them, the financial services and facilities provided were a rational market response, appropriate to the contemporary needs of industrial (and other) borrowers.[8] Thus, they emphasise the flexibility and range of services available – from the select group of first-class City merchant houses specialising in large-scale capital issues, to the myriad of small-scale advisers and institutions (in both London and the provinces) – including solicitors, accountants, banks and (often ephemeral) firms of company promoters and stock brokers – plus family, friends and acquaintances. The role of deposit banks is acknowledged, although their function is largely consigned to the provision of credit for the industrialist (in other words, the consensus view). The optimists, then, stress that for most British industrial firms internal funding and informal contact with savers were adequate to their modest needs for long-term funds and that when (unusually) 'outside' supplies were required, the mixed-bag of services provided in the market was appropriate to the modest demands being made. In other words, the nature of industrial financing and the degree of industrial involvement from the banks were essentially demand-determined.

It is the supply-side arguments of those that take a more pessimistic view of financial provision in the UK that are perhaps more directly relevant to the present paper. There is, of course, a well-established tradition of highlighting deficiencies in the supply of financial services as a major contributory factor in the relatively low rate of industrial investment in the UK. It is useful here to highlight two general explanation or models: the 'early start' thesis, and institutional constraints.

The term 'early start thesis' is usually applied to a line of argument dealing with Britain's economic performance in general. Within this general analysis it is claimed that the fact that the UK was the first country to industrialise created disadvantages in later years, compared to those countries that made a later start on the path to industrialisation. The allegation carried with it a strong implication of market failure – an allegation that once patterns of economic relationships, institutions and policy are well established they are resistant to change and, as a result, do not behave efficiently. In the specific case of financial markets, it has been common to claim that once established, historical patterns of banking practice and policy persisted beyond the time when they were most appropriate to the economy's needs. Alexander Gerschenkron has been responsible for the most formal exposition of this view, arguing that the type of 'credit banks' that were developed at the time of Britain's industrialisation were to prove detrimental to the country's industrial development in the decades before World War I.[9] More recently contributors such as Kennedy, Elbaum and Lazonick have developed a variant of this argument, laying greatest stress on the role of institutional constraints in inhibiting British financial institutions from actively promoting the industrial transformation necessary for the maintenance of Britain's industrial hegemony at the turn of the century.[10]

For the present purpose, the most telling comparison made by Gerschenkron was that between Britain and Germany. German industrialisation did not occur until after the middle of the nineteenth century, by which time nascent manufacturers not only had to adopt quite sophisticated technologies but also had to begin operations on a sufficiently large scale to be able to compete with overseas suppliers. It was essential, therefore, for entrepreneurs in some important industrial sectors to seek outside funds and advice and, accordingly, a number of banks developed to service their needs. In contrast, British industrialisation had begun at a time when technology was relatively crude and fixed capital needs low. Banks, therefore, concentrated on supplying short-term credit. Once established, Gerschenkron hypothesised, such institutional practices became imbued with a degree of fixity, becoming part-and-parcel of distinct national economic characteristics.

Gerschenkron's grand design was, of necessity, generalised and offered little empirical evidence. In fact, the scant historical research that has been conducted on the English deposit banks during the nineteenth century calls for some modification of the picture presented by Gerschenkron. This work[11] suggests that at least some of the provincial banking companies were closely involved with industry in the middle of the century. In those decades such banks were confined to particular localities as, indeed, were most industrial concerns and, to a degree, a commercial symbiosis existed in which the banks supported local industry. At the same time it is generally accepted that Gerschenkron was correct to argue that by the close of the nineteenth century British commercial banks were overly concerned with the short-end of the money market. For these banks portfolio management laid greatest stress on the liquidity of assets, with the notable absence of involvement in the provision of long-term, or even medium-term, capital for industry.[12] The critical questions, therefore, must be: why and when did this occur?

It is not alleged here that there was a stark transformation of British banking from institutions heavily committed to industrial finance in the middle decades of the nineteenth century, to institutions wholly obsessed with the short end of the market by the beginning of the twentieth century; but a clear shift of emphasis none the less seem apparent. This was a long-term process: from experience, banks learnt to identify 'safe' forms of business; and bank amalgamations, the establishment of more extensive branch networks and the general professionalisation of. banking helped induce a broader standard of 'good' (conservative?) banking practice. Consolidation gave greater economies of scale and established a more uniform code of operations. However, it is the contention here that within this long-term process, short-term liquidity shocks played a critical, reinforcing role. I have argued elsewhere that this was true of mid-nineteent century banking crises in general, but this paper draws particular attention to the crisis of 1878.[13] It does this by conducting an empirical investigation of the impact of the crisis – an attempt to make good part of the deficiency of historical data on the role of the commercial banks.

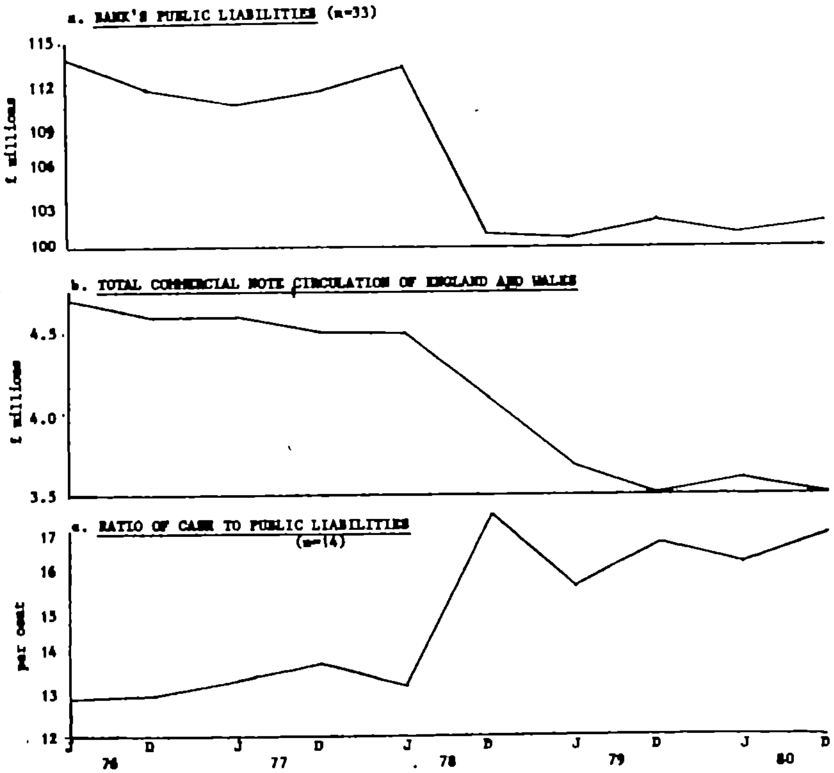
The crisis of 1878 has an importance in the general debate on the nature of the British bank/industry axis because of the claims of a number of commentators. To these people, 1878 was a watershed in the development of British banking. In essence, they argue that after the fright of 1878 British banks in general became more cautious in making loans and, from then on, placed greater weight on asset liquidity – henceforth, they were less concerned with the provision of domestic industrial funds and leaned more towards the financing of international trade and government borrowing. Here then is an historical episode that, potentially, may have significantly widened the cleavage between British industry and finance.

However, as with many of the allegations levelled at the financial sector, the specific claims about 1878 have rested on an extremely slim empirical base. In a recent volume of essays designed to illustrate the importance of the part played by institutional rigidity within Britain's economic decline, Bernard Elbaum and William Lazonick do not hesitate to highlight the importance of the 1878 turning point, a turning point which led to major institutional changes in banking and the demise of what long-term industrial finance had previously been supplied by the commercial banks.[14] However, no authority is cited and it must be assumed that they are accepting the claims of Best and Humphries who contribute one of the essays to the volume.[15] But here, too, actual evidence is hard to locate. It would appear that Best and Humphries are relying on the views expressed by Jefferys in an unpublished Ph.D. thesis that dates back 50 years.[16] It is this thesis that also provides the 'evidence' for Kennedy, another of the chief advocates of the importance of 1878.[17] The Jefferys thesis, in fact, was dealing with the broad issue of trends in business organisations over a very long period and his few comments on the 1878 crisis are not substantially supported by reference to the historical record, except in the case of a number of iron companies.[18] The truth is that – so far – the evidence on the impact of the 1878 crisis on the banks and their lending policies is pretty slim. This is not to say, of course, that the 'institutionalists' are wrong about 1878, but it is to say that their case lacks evidence. The purpose of this essay is to add empirical flesh to the bones of the argument.

In a companion paper it has been shown that, despite claims to the contrary, there was indeed a very severe liquidity crisis for the deposit banks in 1878 – in fact, the crisis was amongst the worst of the nineteenth century.[19] It has long been accepted that this was so in Scotland, where the most notorious of the bank failures (that of the City of Glasgow Bank) occurred, but new data compiled from the archives of the banks show that this was also true of the more important banking sector of England and Wales. In Figure 1 the series for the public liabilities of English and Welsh banks, the commercial bank note circulation (i.e. excluding Bank of England notes) fell by a very sharp 10.6 per cent in the latter half of 1878 and notes were down by 9 per cent (by 16 per cent in the twelve months to June 1879).[20] Moreover, the cash ratio for the fourteen banks for which information is available shot up from 13.5 per cent to over 17 per cent between June and December 1878, a peak for the previous three decades. There is no doubt that the crisis of 1878 posed extremely severe problems for the deposit banks. In this general sense the credentials of 1878 as a *potential* watershed in British banking history are established.

In this paper the evidence is presented in a more disaggregated form. Particular emphasis is placed on the experiences of individual deposit banks, in effect providing a series of case studies. These reveal how the crisis impacted on the banks' management of their assets, including lending. The internal business records used fall under two broad heads: general balance sheet data which provide information on the overall balance of assets and liabilities; and internal minutes and correspondence which reveal more of policy and practice. As will become clear, though, the nature of the evidence is such that whereas the case for asserting that there was a permanent break in policy in 1878 remains intact, it remains unproven. The historical record speaks plainly of the trauma experienced by bankers in that year. It also reveals serious problems with some industrial lending. In this sense it is wholly consistent with the institutionalists' thesis. But while it may be suggestive it does not yet constitute proof.

FIGURE 1
ENGLISH DEPOSIT-BANK LIABILITIES AND CASH RATIO, HALF-YEARLY, 1876–1880
(seasonally adjusted)



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Informed contemporary opinion (as expressed in such as the *Bankers' Magazine* and *The Economist*) correctly emphasised the domestic origins of the liquidity pressure of 1878, with the foreign exchanges, and even the Bank of England's gold reserve, remaining unexpectedly buoyant compared to experience during earlier crises. At the time, the problems facing provincial banks were highlighted. A common feature of the two most dramatic failures of the year – of the City of Glasgow Bank, in October, and the West of England & South Wales District Bank, in December – was the degree to which their assets had become 'locked-up' in large loans on a small number of accounts. This meant that risks were not spread adequately and liquidity was endangered. The main mouthpiece of the banking profession, the *Bankers' Magazine* was forthright in its opinion.[21] On the City of Glasgow Bank, it claimed:

> The causes which have led to the downfall of this once flourishing concern appear ... to have been ... the trusting of enormous sums to a few borrowers. This, even when the firms concerned are of first-rate standing, is a very dangerous course for any bank to take ...
>
> In one case, at least, the advances were made on the security of land in New Zealand ... To make heavy advances on fixed securities of this nature can never be a desirable thing for a bank. A bank should never, to any large amount, make such advances as do not turn into cash without long delay ...
>
> We can never think it consistent with the prudent conduct of business for a bank, unless it holds very large sums indeed in reserve, at call and at short notices, to pledge itself as the City of Glasgow Bank appears to have done to an extent nearly the double of its capital and its reserve.[22]

Similar problems of illiquidity and the undue concentration of risk were identified in the West of England & South Wales District Bank collapse:

> There had been ever since the Fothergill (Plymouth and Aberdare Ironworks) failures in 1875, a considerable lock-up of resources, and it was rumoured that advances had been made to other South Wales firms and companies which could not be readily realised.[23]

Another important forum for 'public opinion' was *The Economist* Through its pages, the editor counselled less risk-taking, the sacrifice of banking profits for the sake of stability, with the build up of cash and near-cash assets.[24] The failure of the small Cornish Bank (Tweedie, Williams & Co.) was used to extol the virtues of holding a very liquid portfolio:

> Another side of our banking system is illustrated by this disaster, and that is the damage which may exist when a bank with comparatively narrow resources associates itself too closely with the local business of a limited district ... The advances may be all sound. There may be ample margin to cover risk. But the security may be such as a bank ought hardly to hold, or ought only to hold sparingly. In a time of sudden pressure the resources to meet the demands of the moment are not forthcoming, and credit is sacrificed in the immediate surprise.[25]

Privately, this was also the view being expressed at the Bank of England.[26] The fear amongst these influential contemporaries was that other provincial banks had been pulled into dangerous and 'unprofessional' practices. In particular, that they had 'locked-up' their assets in illiquid loans as a consequence of the prolonged industrial depression of the 1870s. The assumption was that as industrial customers had found profits falling they would have borrowed more from their banks – perhaps in the hope of early repayment or reduction once business recovered – but, as the depression continued, they had been obliged to roll over their debts. The problem for their bankers was that they were now being squeezed from both sides. On the liabilities side of their business, bank failures had frightened note and deposit-holders into holding more currency (coin and Bank of England liabilities *de facto*). At the same time, the effects of the economic doldrums had been to freeze a component of their loans. Thus, the banks were now being called upon to liquidate more of their assets for cash at just the time when industrial loans made their portfolios less liquid. This, at least, was the fear of some influential commentators. How justified was this fear?

The data in Figure 1 have already shown that there was, indeed, a very sharp pressure on bank resources in 1878 and that bank business in general took a serious knock. Disaggregated data show that this was true of all areas in the provinces. Data drawn from manuscript balance sheets are presented for broadly-drawn geographical English regions in Table 1 – the Midlands (from Nottingham to Kidderminster), Lancashire, the North/North-East (namely, Yorkshire, Humberside, Cumberland and Northumberland) and the South-West – and it can be seen that the banking sectors in all four suffered sharp knock-backs during 1878. Thus, weighted averages of public liabilities for the groups of banks in all regions fell by between 8.5 per cent and 12.7 per cent in the twelve months to June 1879 (December figures are also shown for different sized samples). In fact, without exception every individual bank included in the survey suffered a contraction of business at this time. Banks of different sizes were involved – the tiny Rochdale Joint Stock Bank saw public liabilities contract by 40 per cent (to £51,000) in the twelve months to March 1879, the Leeds & County Bank took a drop of 23 per cent (to £827,000) in the year ending June 1879, and the more substantial Lloyds Bank suffered an 11.4 per cent fall in the same period. It was also true of banks in industrial areas, commercial areas and rural areas.

For the provincial banks, then, the immediate impact of the liquidity crisis was severe and (as far as the available data are concerned) universal. Contemporary press comment, therefore, was right to highlight the severity of the pressure outside London. In fact, as will become clear, further examination of the business records of the time reveals that for banks in industrial areas, press opinion was also correct in stressing the serious implications for the liquidity of bank assets.

TABLE 1
THE SLUMP IN ENGLISH BANK LIABILITIES IN 1878:
FOUR PROVINCIAL REGIONS

		Lancashire	North/ North-East	Midlands	South-West
		I. Dec. 1877 - Dec. 1878			
Number of banks in sample:		6	10	9	4
Average change (%), in 'public liabilities' over previous year	Weighted*	-12.4	-3.7	-7.5	-7.0
	Unweighted	-16.6	-3.4	-7.9	-7.1
		II. June 1878 - June 1879			
Number of banks in sample:		7	11	8	2
Average change (%), in 'public liabilities' over previous year	Weighted*	-10.8	-12.6	-9.3	-12.2
	Unweighted	-8.5	-12.1	-10.1	-11.8

Notes: 'Public Liabilities' = total liabilities *minus* proprietors' capital. That is, essentially notes (if issued) and deposits, but including interbank balances.
*weighted according to relative value of liabilities.

Sources: London clearing bank archives.

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A case study approach is instructive here. What it reveals is that there was a group of banks in industrial areas whose businesses had become closely intertwined with the commercial fortunes of a small number of industrial customers. For these, the experience of 1878 was to provide a salutary lesson in the critical importance of retaining a sufficiently liquid asset structure, and a sore reminder that industrial loans did not fit within this category of bank assets.

The experience of the Cumberland Union Bank is a case in point. This was a medium-sized provincial company, with a head office in Carlisle and twenty branches throughout this part of the North-West. Proprietors' paid-up capital was £225,000 and its authorised note circulation just over £35,000. At the time the bank's vulnerability was perceived by its own management as being its commitment on a small number of industrial accounts, especially loans to companies in the iron industry.[27] In fact, this apprehension was already being expressed prior to the City of Glasgow Bank failure. It seems that the bank had been increasingly drawn upon by the iron companies since the middle of the decade as the industrial depression persisted. In the event, though, not many outright losses were incurred by the bank – the industrial customers involved survived the bad patch and eventually met their obligations – but the financial pressure starkly highlighted the dangers to the bank. Obviously large industrial loans were illiquid. They were neither resaleable, nor despite the severe pressure on the bank's resources, did it prove possible to get industrial customers to effect speedy and significant reductions.

The crisis also exposed the bank's vulnerability to even one large industrial failure which could drag the bank down with it. For instance, by May 1878 the West Cumberland Iron & Steel Co. had an outstanding overdraft of £170,000 (£20,000 above the agreed limit and £70,000 above what the bank now thought prudent).[28] This was no mean sum for this particular bank, of course, as it was equivalent to three-quarters of the paid-up capital. Obviously failure of this one customer carried the threat of liquidation for the bank itself and, in fact, there were other industrial customers (such as the Whitehaven Hermatite Iron Co. and Burngeat Brown & Co.) being carried in a similar manner although the exact sums involved are not known.

The bank's reaction to the crisis is instructive. The management did what it could to tighten controls especially on the monitoring of loans. Even quite modest-sized debit balances of £5,000 were referred to the full board of directors.[29] There was also great pressure on all customers to reduce borrowing. In the meantime cash reserves at the bank's London banking agent (Barclays, Bevan & Co.) were built up and there was a switch of investments out of railway preference stock to more readily marketable Government Consols. There was also an aborted attempt to widen the capital base by proposing a merger with the neighbouring Whitehaven Joint Stock Bank in September 1878.[30] In the following year, however, the bank did succeed in making a new equity issue.

Available data suggest that other banks in the immediate vicinity were in as sorry a state as the Cumberland Union Bank. The Carlisle City & District Banking Co., for instance, suffered a loss of liabilities to the tune of 17 per cent in the twelve months to June 1878, and a further 12 per cent loss to June 1879.[31] The Carlisle and Cumberland Bank saw liabilities drop by a more modest 9 per cent (June 1878–June 1879), but the Bank of Whitehaven's business contracted by a devastating 33 per cent.[32]

More detail is available for the Bank of Whitehaven. Of its liabilities, in the year to June 1879 notes were down 17 per cent (to £19,000), time deposits down 21 per cent (to £205,000) and sight deposits down 47 per cent (to £269,000). Obviously, drastic remedial action was called for. This took two forms: capital funds were augmented (proprietors' capital was increased from £164,000 to £287,000, June 1878–June 1879) and assets were 'encashed'. In this last regard, management reduced outstanding loans and bill discounts and drew on the extraordinary large cash balance that had been amassed by the middle of 1878.

Once again, a number of features common to other banks was present. According to reports current at the time this bank's problems mirrored those of the Cumberland Union.[33] The difficulties were said to have stemmed from the general industrial depression and, in particular, from the bank's over-reliance on one large industrial account. In fact, it was reported to have lent up to £200,000 to the Workington Iron Co. at a time when total paid-up capital was only at £98,000. Given the uneasiness of the money market, it is not in the least surprising that once news of such involvement began to leak out, there should be a run on the bank.

The Yorkshire Banking Co. found itself in a very similar position to these other northern banks.[34] This bank had its head office at Leeds and maintained a regional network of 14 branches throughout Yorkshire. Just before the crisis broke liabilities to the general public stood at over £2.5 million, including a note circulation of £111,000. Paid-up capital was £250,000, although an additional £109,000 capital reserve had been accumulated. As is clear from Table 2, there was a severe jolt to business in 1878, with liabilities to the general public crashing by over 27 per cent (or some £700,000) between June 1878 and June 1879. It is also clear that the run affected all three categories of public liabilities – notes (down 16 per cent), time deposits (down 30 per cent) and sight deposits (down 26 per cent). The problem in these critical months, then, was the same as that facing banks across the country – to cut back commitments in the face of this sharp contraction of resources and yet, at the same time, maintain and try to restore confidence in the bank's ability to pay cash on demand.

For the Yorkshire Banking Co. the cut-back in resources was the £0.7 million fall in deposits and notes. Over time, a good part of this was met by reducing accommodation to the private sector – bills were reduced by £72,000 by December 1879 (down 17 per cent on June 1878) and advances were cut back by almost £400,000 (down 18 per cent). But in the immediacy of the liquidity crisis itself – during the second half of 1878 when liabilities fell by £0.5 million – it proved impossible to reduce private sector lending quickly enough. Thus, bill holdings in December 1878 were more or less the same as in June, and advances were down by only £150,000. In the emergency the bank found it extremely difficult to

LIABILITIES YORKSHIRE BANKING COMPANY, BALANCE SHEET DATA, HALF-YEARLY, 1878–1881 (£1000s)

Date (June, Dec)	Liabilities to Public				Liabilities to Banking Sector					Liabilities to Proprietors		
	Notes	Sight Deposits	Time Deposits	Total	Loan from Bank of England	Loan from London Banking Agent	Provincial Bankers' Balances	Loans on Consols	Bills Redis-counted	Share-holders' Capital	Capital Reserve	Profit and Loss
J78	111	1471	960	2542	0	0	0	0	0	250	109	31
D78	104	1144	778	2026	40	146	18	98	174	250	32	30
J79	93	1084	668	1845	30	29	25	0	109	250	32	21
D79	102	1116	681	1899		22		-	-	298		35
J80	100	1176	696	1972		21		-	-	261		36
D80	95	1293	687	2075	0	0	10	-	-	263	15	20
J81	101	1236	737	2074	0	71 (drafts)	8	-	-	288	35	22

ASSETS [Ratio to Public Liabilities in Brackets, %]

	Cash	Money in London + on call	Bills on Hand	Bills in Bank of England	Bills Redis-counted	Past Due Bills	Invested in Consols	Advances	Bad Debts	Property and Furn-ishing
J78	151[5.9]	-	416 [16 4]	0 [0.0]	0 [0.0]	-	100 [3.9]	2002 [78.8]	15 [0.6]	63
D78	162[8.0]	-	299 [14.8]	45 [2.2]	174 [8.6]	117 [5.8]	100 [4.9]	1854 [91 5]	19 [0.9]	70
J79	150[8.1]	-	225 [12.2]	33 [1.8]	109 [5.9]	119 [6.4]	0 [0.0]	1643 [89.1]	14 [0.8]	74
D79	162[8 5]	-	496 [26.1] **	—	-	-	-	1453 [76.5]		88
J80	134[7.0]	-	536 [27.9] **	—	-	-	-	1502 [78 1]		89
D80	109[5.3]	109 [5.3]	420 [20.2]	0 [0.0]	-	131 [6.3]	100 [4.8]	1443 [69.5]	-	82
D81	94[4.5]	197 [9.5]	299 [14.4]	0 [0.0]	-	128 [6.2]	128*[9.5]	1522 [73.3]	-	82

Notes: * plus £96,000 of other first-class securities. – Indicates that nothing was specified under the heading.
** Total Bills net of rediscounts, i.e. includes bills on hand, past due bills and bills in Bank of England (if any).

Source: Auditors' Minutes, X45 (Midland Bank Archives).

cut off credit to its customers. It was partly a question of contractual obligation, partly one of maintaining customer goodwill, but it was also a harsh fact of life that during the recession customers had to be carried by their banks or close down. Again, the crisis starkly highlighted the illiquid nature of bank advances: their ownership was not transferable within the money market, nor could quick repayment be assured. Moreover, the failure to cut advances at a time when notes and deposits were contracting meant that the overall asset structure became less liquid (with the ratio of advances to public liabilities rising from 79 per cent to over 92 per cent – see Table 2).

An additional strain for the Yorkshire Banking Co. was the need to maintain a cash balance adequate to meeting the extraordinary demands that could arise in those uncertain times. Obviously no relief was possible from reducing cash balances. In fact, during the crisis the ratio of cash to public liabilities rose sharply from under 6 per cent to over 8 per cent.

Just how the Yorkshire Banking Co. did meet the crisis is shown in Table 2. The bank drew on its own resources to some extent, by liquidating £77,000 of its accumulated capital reserve, but the loss of resources was met mainly by borrowing from the rest of the banking sector. By December 1878, £146,000 of credit had been arranged with the bank's London banking agent (Williams & Co.), £98,000 had been raised in London on the security of Consols, a loan of £40,000 (on the security of bills) had been raised from the Bank of England, and another £174,000 of bills of exchange had been rediscounted, mainly in the London money market.

There is no doubt that this was a very sharp lesson in the importance of liquidity, in the importance of maintaining an adequate portfolio of assets that were readily marketable in the London money market at all times. Indeed, the balances drawn up for December 1880 and December 1881 suggest that the bank was already beginning to implement changes in its asset structure along these lines. In particular, holdings of first-class securities were almost doubled (Table 2) and a substantial amount of balances were placed 'on call' in the London money market; although it is notable that at the same time this bank reduced its cash balances.

The internal records of the company reveal more details of the nature of the crisis at this particular bank. Especially useful are the half-yearly Auditor's Reports to the Board and the general manager's letter book. John Harley Blackburn, an accountant from Leeds, succeeded his father to the position of auditor just in time to report on the company's financial status in the middle of 1878. His function was to send out formal verification of the half-yearly accounts to shareholders but he also made more detailed returns to the directors. In these he reported on the accounts of all the company's offices. During the crisis his comments and recommendations were incisive and unambiguous. Although declining profitability gave cause for concern, the central anxiety was that of liquidity. Commenting on the debilitating run on deposits at the end of 1878, he told the directors:

> This large amount naturally suggests the question. How soon may another £500,000 be required? and supposing that were to be the case during the next half year, where are the available funds to meet it? The Cash & Bills on Hand could not at the very utmost, leaving sufficient to enable the Bank to conduct business, be reduced more than £100,000. Where therefore is the remaining £400,000 to come from? From the advances on Current a/cs? But how soon can this amount be got in? & how soon may it be wanted? These are questions for the very serious consideration of the Board.[35]

In fact, the letter book of the general manager (J.W. Gatecliff) shows that the reduction of private sector loans was an overriding concern from the autumn of 1878, throughout 1879 and into 1880. As he advised his Hull manager: 'These are times which do not admit of Bankers being lenient. Your customers have had their turn and now we intend to have ours.'[36] All loans had to come down but the particular concern was with those in excess of agreed limits and those which had been outstanding for a long time, with little turnover on the account. It was common to find the agreed overdraft limit had been set at 10 per cent of the turnover of the account, but it was also clear that application of this rule had become lax and a number of accounts were almost moribund. Management decided it was time for changes. For instance, in urging the manager at Thirsk to reduce a particular loan, Gatecliff made the telling point that: 'The fact is, the account is completely inoperative and such as Bankers do not *now* like'.[37] (italics added). Such 'dead loans' or 'mortgate accounts' were not to be tolerated in the future. Instead Gatecliff suggested customers should go elsewhere for long-term finance:

> Such advances as these should be obtained through your Solicitor, and not from a Bank: and taking into account the very long time you have had a large advance coupled with the bills we have discounted for you, you must not wonder at our now being determined to have the figures very considerably reduced.[38]

Apart from attempting to reduce the amount and improve the liquidity of advances, branch managers were also told to avoid taking bills with a usance of over four months because of the difficulties of discounting long-dated paper in London. Finally, the bank also sought to instil a greater degree of stability into its deposits by offering specially favourable rates to existing account holders with large sums to their credit, provided they were willing to consent to a longer period of notice (1–3 months) before withdrawal.[39]

Despite these efforts, the auditor's report for the half-year to June 1979 stressed the 'reduction of business, through the continued depression, and the withdrawal of deposits ... and there is still a want of confidence.' A major problem of illiquidity persisted. In particular, the auditor believed it was crucial to continue cutting loans. The problem was that: 'A very considerable amount of these advances to Customers is locked up and nonproductive, arising chiefly from the failure of the parties having the advances.' Reflecting the fundamental concern for liquidity, Blackburn recommended a number of changes to accounting and managerial practice. He wanted the bank to tighten up its procedures for checking the status of bills held by the various branches and he also wanted fuller, more up-to-date information on all failed accounts. He recommended, too, that the bank's own inspector should make more regular and thorough checks on the securities held at the branches as collateral against loans, 'especially where there are any payable to bearer, such as United States Bonds and that class of securities.'

A particular concern for the auditor at this time was the fact that the bank had taken over the operation of an industrial plant of a failed customer:

> The general business of the Bank is being conducted with the ordinary risks of Banking, but I understand the Clay Lane Furnaces are being worked by the Bank. This I think does not come within the provisions of the Deed of Settlement therefore the consent of the Shareholders to a continuance of the working should be sought.[40]

Blackburn also pressed the board of the Yorkshire Banking Co. to strengthen the company's capital base by making a new share issue (in the event, this was made in 1880).

Another instructive case is that of the York City & County Bank, which had a head office in York, 19 branches in the north-east of England, and a paid-up capital of £162,500). This was a close rival to the Yorkshire Banking Co. and it faced many of the same difficulties in the 1870s. By the time the 1878 crisis hit, the bank had already been weakened by the problems facing its industrial customers, especially in the iron industry. These industrial companies were finding it impossible to reduce their outstanding loans; indeed, they were keen to attract more support. As a result this bank, too, was obliged to carry industrial customers or face heavy losses, or even the possibility of liquidation.

The problems were most acute at the Middlesbrough branch, as the following exerts from the bank's local agent's reports testify.[41] Already by 1875 he was talking of a 'severe trial and depression in this district', with £20,000 of losses on the accounts of industrial customers. In the following year, he declared that, 'Never before have disasters and failures in this district been so rife'; and twelve months later he was claiming that, 'the past year (1877) is the worst the Iron trade has experienced.' The story was the same for 1878. The impact on the business not only of the Middlesbrough branch, but of the whole of the York City & County Bank, was devastating. Bad debts were accumulated and liquidity sapped. By January 1877, at this branch alone a staggering £302,525 of bad debts had been amassed, a sum worth almost twice the bank's paid-up capital. Again there can be no doubt that for this bank experience with industrial loans was chastising indeed.

By 1878 the main problems were focused on the account of one of the iron companies, Vaughan & Co.[42] Here, debts of £93,000 were outstanding (it seems that the Yorkshire Banking Co. was also a creditor to an unknown amount). In the event the bank had to foreclose on the iron company's property and (as with the Yorkshire Banking Co.) take ownership of the iron works. Ultimately, though, this was sold and the proceeds proved adequate to cancelling the debt. So, as with the great majority of the deposit banks, the main problem was not one of ultimate solvency but rather one of liquidity.

How did this particular bank meet the general pressure? The primary concern was to ensure that cash and near-cash assets were sufficient. For instance, short-term loans to the money market (for example, on the security of railway stock) were withdrawn and added to cash balances. Similarly, at the end of 1878 credit facilities with the bank's London agent (Barnetts Hoares) were extensively drawn upon. The management of the York City & County Bank was also desperately keen to reduce loans to the private sector and instigated tighter supervision of all moderately large overdrafts. Following the failure of the West of England & South Wales Bank in December, emergency action was called for. First, it was obvious that overdrafts could not be brought down quickly enough. There was also reluctance to sell the bank's holdings of Consols. Here, the reluctance stemmed partly from the inevitable capital loss that would be sustained in selling at such an unfavourable time but, more importantly, there was the utmost concern to avoid adverse publicity. If the bank were seen to be selling off investments this could undermine its already tarnished image in the money markets. The directors therefore decided to raise more capital (£100,000) from amongst themselves.

The paramount importance of maintaining the appearance of stability is emphasised by what was revealed (or, rather not revealed!) to proprietors. At the annual general meeting in January 1879, shareholders were not told of the large bad debts, and no mention was made either of the Vaughan account or of the extra £100,000 of directors' capital to cover potential losses.[43] In fact, profits were reported as being down only very slightly, and a handsome dividend of 20 per cent was paid on equity.

The case of another bank, the Bank of Liverpool, further illustrates the importance of maintaining a highly liquid portfolio capable of meeting all emergencies. It also reinforces the view that the 1878 crisis was so severe as to have had, potentially, major long-term repercussions. Balance sheet data are available for the Bank of Liverpool and some of these are presented in Table 3.[44] This bank was larger than those considered so far, with deposit liabilities of some £4 million (no notes were issued) and shareholders' capital in excess of £1 million. It also differed in that it had just the one office and, of course, was based in a predominantly commercial centre. The bank's asset structure reflected this, with net holdings of bills of exchange (a common form of commercial credit) equal to about three-quarters of deposits in 1877 and with 'liquid assets' in excess of deposits[45] (see Table 3 for definition). Advances, on the other hand, were equal to just about one-half of deposits – compared to around 80–90 per cent for the Yorkshire Banking Co.

Once again the short-term impact of the 1878 crisis can be seen to have been severe, with deposits down 16 per cent (all figures, December 1877 to December 1878), with sight deposits alone accounting for the great bulk of the fall. Such a withdrawal of deposits meant a loss of about £0.7 million of the funds available to the bank (in addition to the reduction of £100,000 in interbank balances). It can be seen from Table 3 that the highly liquid asset structure enabled the bank to meet this loss by reducing its bill holdings (down £300,000) and by running down 'money at call and short notice' with the London money market (down £0.5 million). In contrast, advances appear as a much less flexible component of the bank's portfolio. This bank, then, may have been operating an asset structure closer to the models of liquidity promoted by the likes of the *Bankers' Magazine* and *The Economist*. Certainly the changes in asset composition are wholly consistent with the rest of the evidence in stressing the crucial importance of having the means of gaining ready access to funds from the London money market.

The experience of another Merseyside-based bank, the North & South Wales Bank, reinforces this view of the crisis. This medium-sized bank (by provincial standards) had its head office in Liverpool but a branch network based mainly in Wales. It also issued its own notes. It was, thus, a different type of institution than the Bank of Liverpool, less dependent on commerce and international trade. Also the collapse of the West of England & South Wales Bank was always likely to have a much greater impact on the North & South Wales Bank if only because of the geographical overlap.

Table 4 provides some summary balances. The most notable features are the now-familiar sharp contraction in deposits (and notes to a lesser extent) – of some 16.5 per cent between December 1877 and December 1878; a dramatic run-down of balances with other sections of the money market (especially bill-brokers) in order to amass an exceptional cash balance at the end of 1878; and a cut-back in private sector lending via bills and advances. By the beginning of the new decade there had been a switch to a more liquid balance sheet, with advances lower relative to total deposits (at 35 per cent), and the sum of cash, balances with other

TABLE 3

BANK OF LIVERPOOL BALANCE SHEET DATA, ANNUAL, 1876–1880 (£1,000s)

	LIABILITIES				ASSETS (Ratio to Public Liabilities in brackets)					
	Liabilities to Public					Balances with other banks				
Date (Dec.)	Sight Deposits	Time Deposits	Total Deposits	Inter-bank Balances	Cash	London Agent	Other	Bills	Advances	'Liquid Assets'
1876	2488	1174	3662	1470	145(4.0)	13	57	2817(76.9)	1797(49.1)	4309(117.7)
1877	2758	1203	3961	1668	99(2.5)	17	8	2909(73.4)	1938(48.9)	4716(119.1)
1878	2212	1112	3324	1503	120(3.6)	11	51	2558(77.0)	1857(55.9)	3829(115.2)
1879	2699	1110	3809	2012	146(3.8)	11	90	3535(92.8)	1870(49.1)	4871(127.9)
1880	2699	1038	3737	1520	180(4.8)	16	81	2521(67.5)	1811(48.5)	4382(117.3)

Note: 'Liquid assets' = cash, balances with other banks, bills and 'money at call and short notice'. In the case of this bank no figures were given for investments, e.g. in British government stock, and it is feasible that these may have been included in liquid assets.

Source: BLDR (A51/10), Barclays Bank archives.

TABLE 4

NORTH AND SOUTH WALES BANK BALANCE SHEET DATA, ANNUAL, 1876–1880 (£1,000s)

	LIABILITIES					ASSETS (Ratio to Public Liabilities in brackets)								
	Liabilities to Public						Balances with other banks				Investments			
Date (Dec.)	Notes	Sight Deposits	Time Deposits	Total	Inter bank Balances	Cash	London Agent	Bill Brokers	Other	Bills	3% Consols	Rail-road debent-ures & bonds	Advances	'Liquid Assets' (exc. Consols)
1876	57	2612	2142	4811	7	410 (8.5)	94 (2.0)	1054 (21.9)	23 (0.5)	1359 (28.2)	249 (5.2)	262 (5.5)	2085 (43.3)	2940 (61.1)
1877	53	2629	2273	4955	7	280 (5.7)	89 (1.8)	1056 (21.3)	125 (2.5)	1326 (26.8)	249 (5.0)	262 (5.3)	2289 (46.2)	2876 (58.0)
1878	50	2201	1893	4144	36	757 (18.3)	0	155 (3.7)	276 (6.7)	1240 (29.9)	249 (6.0)	182 (4.4)	1990 (48.0)	2424 (58.6)
1879	46	2451	1957	4454	21	340 (7.6)	42 (0.9)	1031 (23.1)	109 (2.4)	1292 (29.0)	500 (11.2)	182 (4.1)	1654 (37.1)	2814 (63.2)
1880	46	2683	1963	4692	12	294 (6.3)	69 (1.5)	921 (19.8)	105 (2.2)	1646 (35.1)	500 (10.7)	182 (3.9)	1639 (34.9)	3035 (64.7)

Note: 'Liquid assets' = cash, balances with other banks and bills.

Source: M73 – M79, Midland Bank archives.

banks and bills (grouped together as 'liquid assets' in Table 4) relatively higher. In addition, the bank had doubled its holdings of Consols.

The internal records of the North & South Wales Bank show that it was preoccupied with many of the same anxieties of other northern banks.[46] In 1878 the urgent need was to maintain liquidity. In October the North & South Wales Bank was concerned enough about the drop in deposits to enquire of its London agents, the London & Westminster Bank, as to the latter's attitude to any sudden call for cash that might be required. And in December such a call became necessary, with the following letter sent off from the bank's Liverpool manager to the London & Westminster Bank on 10 December:

> The failure of the West of England & South Wales District Bank ... rendered it provident, in our judgment, to strengthen our tills at certain points. We therefore telegraphed you today to place £200,000 to our credit with the branch Bank of England here so that we may avail ourselves of that amount tomorrow.

The loan was covered by the deposit of £155,000 of short-dated bills and the recall of £35,000 from two London discount houses. 'To make assurance doubly sure' the London & Westminster was also sent cheques to the value of £0.5 million drawn against money on 'short notice' with the London discount houses, plus another batch of bills. The Liverpool bank hoped that this would be adequate security not only for the £200,000 loan but for any other loans that may be necessary over and above the 'ordinary' overdraft facility in London of £100,000. In the event the run on the North & South Wales Bank was not as disastrous as feared and by December the Liverpool manager was apologising to the London & Westminster Bank for any inconvenience caused by the suddenness of the demands for cash – 'it was only from an act of, perhaps, over-caution that we drew on you so largely'.[47] Nevertheless, the provincial bank had passed through a harrowing time and, as with the other banks, it had been forced to acknowledge the critical importance of ready access to an adequate supply of securities acceptable at all times to the London money markets.

The problems were just as great in other parts of the kingdom. The historian of the Scottish banking system, S.G. Checkland, documented the impact of the City of Glasgow Bank failure on other Scottish banks. In his view:

> It was the great event in the lives of a generation of Scottish bankers, conditioning thought and action, placing a great premium on safe and more conservative banking ... in the Scottish case there was a profound and probably excessive reaction toward security.[48]

For Ireland, Ollerenshaw has shown that the general depression of the 1870s (most marked in agriculture and the linen industry) was already leaching away the commercial banks' resources when they suffered a

TABLE 5

STOURBRIDGE AND KIDDERMINSTER BANK BALANCE SHEET DATA, ANNUAL, 1876–1879 (£1,000s)

	LIABILITIES TO PUBLIC				ASSETS (Ratio to Public Liabilities in brackets)						
						Balance with other banks					
Date (Dec.)	Notes	Sight Deposits	Time Deposits	Total	Cash	London Agent	Money at call & s.n.	Bills	Gilt-edged Invest-ments	Advances	'Liquid Assets' (exc. Gilts)
1876	65	624	516	1205	72 (6.0)	37 (3.1)	63 (5.2)	266 (22.1)	25 (2.1)	970 (80.5)	438 (38.8)
1877	66	599	513	1178	89 (7.6)	29 (2.5)	5 (0.4)	258 (21.9)	25 (2.1)	1010 (85.7)	381 (32.3)
1878	60	492	474	1026	85 (8.3)	10 (1.0)	12 (1.2)	186 (18.1)	-	990 (96.5)	293 (28.6)
1879	65	513	432	1010	92 (9.1)	36 (3.6)	78 (7.7)	211 (20.9)	-	860 (85.1)	417 (41.3)

Notes: 'Liquid assets' = cash, balances with other banks and bills.
– indicates that nothing was specified under the heading.

Source: T8, T9, Midland Bank archives.

sharp jolt with the emergence of the crisis on the mainland.[49] Total deposit and current account balances fell by 8 per cent, 1878–80, with the note circulation dropping to an historical low (at 87 per cent of the authorised issue) in the third quarter of 1879. Ollerenshaw does not stress any long-term implications for lending policy but he firmly establishes the severity of the knock in the late 1870s.

In the Midlands, too, the deposit banks were badly hit. As Table 1 showed, for the group of eight or nine (depending on date) Midland banks for which data are available, public liabilities fell by about 8–10 per cent. In his history of Lloyds Bank (then based in Birmingham), Sayers confirms the general picture of one of the worst crises of the century. 'Lloyds had, despite their substantial strength, experienced a drain of cash so persistent that they were thereby forced to make further reductions in loans and overdrafts.'[50] Holmes and Green in their history of the Midland Bank (known as the London and Midland at that time) give more details of the effects of the crisis.[51] They leave no doubt that it administered a major jolt and enforced improvements in accounting and other managerial practices. They see it as a major force for greater conservatism in this bank's lending programme.

At the time, the Bank of England was concerned about some of the other Midland banks.[52] The summary balances of one of these, the Stourbridge & Kidderminster Bank, are presented in Table 5 and they suggest that the Bank of England was right to be concerned. This bank issued its own notes with the head office in Stourbridge, 13 branches and a paid-up capital of £100,000. In all, liabilities to the general public were just over £1 million when the crisis struck. In the 12 months to December 1878, notes were down 9 per cent and deposits (especially sight deposits) down 13 per cent. The figures reveal, yet again, how the crisis damaged liquidity and how it obliged the bank to run down balances with the rest of the banking sector and sell off bills of exchange. The directors' minutes also reveal common ground with the other banks that have been surveyed – problems of 'lock-up' on dormant accounts, the accumulation of bad debts, yet the maintenance of the 'normal' dividend on equity (of 20 per cent in this case).[53]

Further elaboration from the records of individual banks is unnecessary. The evidence on the provincial banks is clear enough; the 1878 crisis was severe, it exposed the problems of long-term advances (especially to industrial customers) and reinforced existing predilections towards a higher degree of liquidity for banks.

V

What of the important London banks? Their attitude would be critical to bringing about any general change of direction in the type of business being conducted. The successful London banks were much larger than their provincial counterparts, their businesses more extensive. In many ways, too, the leading London bankers were the opinion makers of the banking world – acting, as they did, as agents to the provincial banks, being close to the seat of policy making (within both the Bank of England and government) and, of course, being at the centre of a mushrooming international money market.

Undoubtedly, the 1878 scare rocked their businesses, too. Table 6 provides some aggregated information for 13 London-based banks during the 12 months to December 1878 (and 11 banks for the year up to June 1879). In December 1877 these 13 banks had total 'public liabilities' of £112.1 million, equivalent to about 22 per cent of the total public liabilities of the UK deposit banks at the time.[54] The 'public liabilities' data seen here can only be put to restricted use in that they include interbank balances, but this is no great handicap for the present purpose of indicating the magnitude of financial flows involved and of assessing how they would have been viewed by individual banks. Without exception all banks suffered a contraction and the London banking sector as a whole received a very serious jolt in 1878, with the aggregate liabilities (weighted average) of the group of banks falling by over 8 per cent in the twelve months to December, 1878 and by over 13 per cent in the twelve months to June 1879. No London bank of any size failed but the knock to business was severe. As in the provinces, banks of all sizes were affected. As can be seen, two of the largest banks in the country – the London & Westminster and the London & County – suffered very sharp contractions. Clearly, not even élite institutions were immune.

In fact, for a short spell rumours of all kinds were circulating in the London money market and, if it had not been for the healthy condition of the Bank of England's bullion reserve, 'panic' of the sort not seen since 1825 may well have ensued. An episode concerning the London & County illustrates the mood of the time.[55] This bank was massive by contemporary standards, with its £23 million of public liabilities making it the third largest of the London banks listed in Table 6. Wild rumours began to circulate in January 1879 and there was such a sharp withdrawal of deposits that at some branches Bank of England notes had to be borrowed from neighbouring banks, and the run was halted only after the London & County had raised £1.8 million in cash from the Bank of England. No, the élite were not immune.

VI

In the event, the liquidity of banking system as a whole was assured because of the lack of pressure on the foreign exchanges – there was no external loss of bullion – which meant that the Bank of England could successfully fulfil its traditional role as lender of last resort. Perhaps this is the reason why a number of commentators have suggested that there was no severe liquidity crisis in 1878?[56] But in this they have been mistaken. The new evidence presented here on the deposit banks

TABLE 6

SLUMP IN LONDON BANKS' PUBLIC LIABILITIES IN 1878 (£ millions)
Change (%) over previous year is given in brackets for Dec. 1878 and June 1879

Date (Dec./June)	Union Bank of London	London & Westminster	London & County	Glyn, Halifax	Prescotts	London & S. West	Consolidated Bank	London & Yorks.
D77	13.2	25.6	23.3	9.7	1.4	1.6	2.9	0.3
J78	12.6	26.7	23.6	-	1.3	1.6	3.0	0.3
D78	12.4 (-5.7)	22.4 (-12.6)	21.5 (-7.7)	9.1 (-6.0)	1.3 (-5.3)	1.6 (-1.6)	2.7 (-12.8)	0.2 (-28.0)
J79	10.0 (-20.4)	23.0 (-14.2)	21.7 (-8.3)	-	1.3 (-3.3)	1.5 (-3.8)	2.8 (-6.3)	0.2 (-33.2)

	Royal Exchange	Alliance	National Provincial	City Bank	Central Bank	Total	Average change (%) on previous year:	
							Unweighted	Weighted*
D77	0.3	1.8	27.2	3.8	1.1	112.1 (n=13)		
J78	-	2.0	-	3.9	1.1	76.1 (n=10)		
D78	0.2 (-40.6)	1.3 (-25.8)	26.5 (-2.7)	2.9 (-25.4)	1.0 (-9.4)	102.9 (n=13)	-14.0	-8.2
J79	-	1.4 (-29.1)	-	3.2 (-17.2)	1.0 (-10.6)	66.0 (n=10)	-16.3	-13.3

Notes: 'Public Liabilities = total liabilities *minus* proprietors' capital. That is, essentially deposits, but including interbank balances.
– data not available. Apparent discrepancies due to rounding.
* weighted according to relative value of liabilities.

Source: London clearing bank archives.

shows conclusively just how severe and pervasive was the shock of 1878.

When it comes to considering the likely impact on the banks' involvement with industry, exaggerated claims must be avoided. The record shows that there was an already well-articulated view of what was considered by the respectable London press as 'unsafe' business for bankers. There was particular concern about long-term loans to industry and about the over-reliance on a small number of large accounts. The record also shows that a sizeable number of banks was, none the less, engaged in this type of business. There was, thus, friction between banking practice, especially in the North, and banking theory as propounded in the London journals. The lines of 'respectable banking practice' were still being drawn up.

The crisis of 1878 brought the issue sharply into focus. At a national level, anxiety was expressed over the position of depositors and shareholders, more especially as many bank shares (including those of the notorious City of Glasgow Bank) carried unlimited liability. The crisis also widened the debate about the adequacy of bank capital and cash reserves (both related to the issue of whether bank dividends were excessive), the safety of small local banks, the effectiveness of accounting controls and the need for greater publicity of accounts. The best-known legislative outcome was the Companies Act of 1879 which introduced a special form of limited liability for bank equity.[57] The whole tenor of the debate, though, makes feasible the suggestion that bankng practice may have taken a more conservative turn after 1878. Undoubtedly, the institutionalists' case has been strengthened by the evidence presented here on the nature of the liquidity crisis itself and the immediate reactions to it. This evidence gives greater credence to the suggestion that the 1878 crisis may have triggered a major shift in deposit bank portfolios, away from long-term loans towards greater liquidity.

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NOTES

Many thanks to Barclays, Lloyds, the Midland, the National Westminster and the Bank of England, for allowing the use of their archives, with special appreciation for the help given by Edwin Green, Henry Gillet and Richard Reed.

1. In particular, G. Ingham, *Capitalism Divided? The City and Industry in British Social Development* (1984) and W.D. Rubinstein, 'Wealth, Elites and the Class Structure of Modern Britain', *Past and Present*, Vol. 76 (1977), pp.99–126.
2. M. Edelstein, *Overseas Investment in the Age of High Imperialism: The United Kingdom, 1850–1914* (1982) and W.P. Kennedy, *Industrial Structure, Capital Markets and the Origins of British Economic Decline* (Cambridge, 1987).
3. Amongst important contributions, see P.L. Cottrell, *Industrial Finance, 1830–1914* (1980); A.R. Holmes and E. Green, *Midland: 150 years of Banking Business*

(1986); R.C. Michie, *The London and New York Stock Exchange, 1850–1914* (1987).

4. A particularly interesting case is highlighted in A.E. Harrison, 'F. Hopper and Co.: The Problems of Capital Supply in the Cycle Manufacturing Industry, 1891–1914', *Business History*, Vol. 24 (1982), pp.3–23.
5. G. Rae, *The Country Banker* (7th ed. 1888) and J.W. Gilbart, *The History, Principles and Practice of Banking* (1911 ed. by Ernest Sykes), 2 vols.
6. C.A.E. Goodhart, *The Business of Banking, 1891–1914* (1972).
7. Cottrell, *Industrial Finance*; A.K. Cairncross, *Home and Foreign Investment, 1870–1913* (Cambridge, 1953), pp.95–108.
8. Edelstein, *Overseas Investment*, Chs. 1–3, 7, 13; Michie, *Stock Exchanges, passim*. For a similar view on the adequacy of capital supplies see W.A. Thomas, *The Finance of British Industry, 1918–1976* (1978), p.116.
9. A. Gerschenkron, *Economic Backwardness in Historical Perspective: A Book of Essays* (Cambridge, MA, 1966).
10. See especially B. Elbaum and W. Lazonick (eds.), *The Decline of the British Economy* (Oxford, 1986), but also see Kennedy, *Industrial Structure*..
11. M. Collins and P. Hudson, 'Provincial Bank Lending: Yorkshire and Merseyside, 1826–60', *Bulletin of Economic Research*, Vol. 31 (1979), pp.69–79; Cottrell, *Industrial Finance*, Ch. 7.
12. Goodhart, *The Business of Banking*. This point was accepted by both the banks' critics, including H.S. Foxwell, 'The Financing of Industry of Trade', *Economic Journal*, Vol. 27 (1917), pp.502–22, and supporters, including W. Leaf, *Banking* (1926).
13. M. Collins, *Money and Banking in the UK: A History* (1988), pp.83–5 and M. Collins, 'English Banks and the Mid-Nineteenth Century Business Cycle', in P.L. Cottrell and D.E. Moggridge (eds.), *Money and Power* (1988), pp.1–39.
14. Elbaum and Lazonick (eds.), *Decline of the British Economy*, p.3.
15. M.H. Best and J. Humphries, 'The City and Industrial Decline', ibid., pp.227–8.
16. J.B. Jefferys, 'Trends in Business Organisation in Great Britain since 1856' (unpublished Ph.D thesis, University of London, 1938).
17. W.P. Kennedy, 'Institutional Response to Economic Growth: Capital Markets in Britain to 1914' in L. Hannah (ed.), *Management Strategy and Business Development* (1976), pp.151–83; and W.P. Kennedy, *Industrial Structure*, pp.120–34.
18. Jefferys, thesis, pp.83–4. Also see the general comment on p.18.
19. M. Collins, 'The Banking Crisis of 1878', *Economic History Review*, Vol. XLII (1989), pp.504–27.
20. In British history this ranks as very severe – in the crises half-years of 1857 and 1866, for instance, there were no absolute falls in the public liabilities series.
21. For instance, see *Bankers' Magazine*, 38, Nov. 1878, pp.976–7; 39, Feb. 1879, pp.69–70, 104, 1144.
22. Vol. 38, Nov. 1878, p.920.
23. Vol. 39, Jan. 1879, pp.17–18.
24. For instance, *The Economist*, Vol. 36, June 8, 1878, p.666; Oct. 5, 1878, p.1166; Nov. 23, 1878, p.1369; Dec. 14, 1878, p.1465.
25. Vol. 37, Jan. 11, 1879, p.29.
26. As illustrated in branch correspondence with the Leeds, Newcastle and Manchester agents.
27. The main sources are Board Minutes (G9) and Private Letter Book (G32), Midland Bank archives.
28. G32, 7 Feb. 1878 and 1 May 1878, for example.
29. G9, 21 Oct. 1878 and 21 April 1879.
30. G32, 9 Sept. 1878.
31. F9, Midland Bank archives.
32. Carlisle and Cumberland – see B1837-82 (AS1E/2), 08, Barclays Bank archives; and for the Bank of Whitehaven, Books nos. 246–8, National Westminster Bank archives.

33. Bank of England branch letter books, Newcastle, Vol. 15, 5 Dec. 1878, p.144.
34. The main sources are Auditor's Minute Book (X45), and Letter Book (X51), Midland Bank archives.
35. Auditor's Report, Dec. 1878.
36. 24 Oct. 1878, p.20.
37. 24 Oct. 1878, p.17.
38. 25 Oct. 1878, p.20 – Gatecliff to Garbutt, Hull.
39. 21 Feb. 1879, p.178.
40. Auditor's Report, June 1879.
41. Y61/6, Midland Bank archives.
42. In addition to the Middlesbrough branch reports (Y61/6), see Board Minutes, Y9 and Y10, especially 23 Dec. 1878 and 9 June 1879.
43. Annual Report to Proprietors, 16 Jan. 1879 (Y9).
44. BLDR, A51/10, Barclays Bank archives.
45. Although as there was a very strong seasonal element in the size of bill holdings (the December figure being higher than June), the figures used here somewhat overstate the case. For instance, at the end of June 1877, bills holdings at £1.9 million were equal to 55 per cent of deposits and 'liquid assets', at £3.2 million, equal to 96 per cent.
46. The main sources are Board Minutes, M18; Liverpool Manager's Letter Book, M116; and George Rae's Letter Book, M222, Midland Bank archives.
47. 12 Dec. 1878 (M116).
48. S.G. Checkland, *Scottish Banking. A History, 1695–1973* (Glasgow and London, 1975), p.478. Also see R.E. Tyson, 'The Failure of the City of Glasgow Bank and the Rise of Independent Auditing', *Accountant's Magazine*, April 1974, pp.126–31.
49. P. Ollerenshaw, *Banking in Nineteenth Century Ireland: The Belfast Banks, 1825–1914* (Manchester, 1987), Ch. 4.
50. R.S. Sayers, *Lloyds Bank in the History of English Banking* (Oxford, 1957), p.211.
51. Holmes and Green, *Midland*, pp.59–70.
52. Bank of England branch correspondence, Leeds, from Head Office, 22 Oct. 1878. Also see London and County Bank's Board Minutes, 1/12346/68, Nov. and Dec. 1878 *passim*, National Westminster Bank archives.
53. Minutes, T6, especially 22 July 1878, 17 Feb. 1879, 14 Mar. 1879 and 21 July 1879, Midland Bank archives.
54. M. Collins, *Money and Banking*, p.40.
55. London and County Board Minutes, 1/12346/68, 21 Jan., 28 Jan. 1879; *Bankers' Magazine*, Vol. 39 (1879), pp.11–12.
56. Two recent examples are J.R.T. Hughes, 'Comment' in Michael D. Bordo and Anna J. Schwartz (eds.), *A Retrospective on the Classical Gold Standard, 1821–1931* (Chicago and London, 1984), pp.265, 269; and Anna J. Schwartz, 'Real and Pseudo-Financial Crises' in F. Capie and G.E. Wood (eds.), *Financial Crises and the World Banking System* (1986), pp.11–40.
57. The Act introduced 'reserved liability' for bank shares which was shareholder liability over and above nominal share values but to a fixed amount only and it could be called upon only if the company were wound up.

THE STRUCTURE AND PROFITABILITY OF THE US ELECTRIC UTILITY INDUSTRY AT THE TURN OF THE CENTURY

By WILLIAM J. HAUSMAN and JOHN L. NEUFELD

In the early afternoon of 4 September 1882 electric lights in the Wall Street offices of Drexel, Morgan & Co. were switched on for the first time. Power was supplied from a generator situated several blocks away in the Edison Electric Illuminating Co.'s Pearl Street station. Although arc lights supplied with current from central generating stations had been illuminating select streets in numerous cities by this time, including New York's Broadway, the events of this September afternoon have come to signify definitively the birth of the electric utility industry in the US.[1] It was the culmination of a long process of scientific and technological gestation, occurring precisely 80 years after Humphry Davy had observed a galvanic spark 'of a dazzling brightness' in his laboratory at the Royal Institution,[2] and some 50 years after Michael Faraday had produced a primitive electric generator. The key to Thomas Edison's ultimate success was that, along with being one of several to have invented a practical incandescent lightbulb, he alone both conceived and developed an entire system for generating and delivering electric current from a central station to homes and businesses. Within a month of its inception, the Pearl Street station was supplying current to nearly 1,300 electric lights (concentrated, however, in a rather limited service area of one square mile).[3] The Edison 'system' spread quite rapidly to other urban areas. By the end of the year Edison had constructed or licensed over 150 central stations around the country; and within eight years Edison and his competitors had installed over 1,000 stations. Twenty years later in 1902 there were 3,620 'electric light and power stations' in operation in the US.[4]

As impressive as this beginning might appear to be, the rapid spread of central station generation of electricity in the US did not translate easily or automatically into financial success for the operating companies involved in the production of electricity. The raw numbers representing the diffusion of the invention conceal the fact that 20 years after Pearl Street the industry remained small-scale, limited in scope, highly competitive, politically challenged, and with very uncertain prospects for the future. There were several factors contributing to this uncertainty.

The early electric utilities were exclusively urban phenomena whose prime business was providing lighting services to central business and residential districts. They spread only gradually to immediately surrounding and suburban areas. As late as 1904 only 70 per cent of the total area of Manhattan had obtained service, and the coverage for other large cities was substantially less than this.[5] Furthermore, the need to run distribution lines over (or under) city streets necessitated the acquisition of municipal franchises, which entangled the companies intimately in local (and sometimes state-level) political affairs. Franchises typically were not exclusive and often were granted for time periods shorter than the economic life of the generation and distribution equipment which the utility had to provide.[6] In addition, competition, both between utility companies and from substitutes for centrally-generated electricity, was fierce. The adoption of the Welsbach mantle led to a resurgence of interest in gas lighting, and some customers actually were switching from electricity back to gas. Electric generators at this time were relatively small and easy to operate, so that large commercial or industrial customers could install 'isolated plants' on their own premises. Other firms, such as street railway companies or ice manufacturers sold their excess self-generated electricity in competition with central stations. The US Federal Trade Commission, when evaluating this era from the perspective of the electrical machinery suppliers in the 1920s, reported that 'in so far as the different manufacturing companies were able to supply their licensees with equipment for duplicated service in supplying power for arc and incandescent lighting, motor load, and, in the late 1880s, street railways, the local companies became competitors. The result was duplication of generating and distributing systems, with consequent low efficiency'.[7]

A technological development that was to have a critical influence on the evolving structure of the industry in the 1890s was the introduction of a competing system (promoted enthusiastically by George Westinghouse) based on alternating current. Alternating current permitted higher transmission voltages, which in turn led to the expansion of the potential service area of any central station adopting the technology. It concomitantly stimulated hydroelectric generation, which inherently required longer-distance transmission. The prospects for alternating current were enhanced with the development of practical motors and metering devices. Edison, as is well known, vigorously resisted alternating current, perhaps irrationally, but more likely out of canny self interest.[8] He lost the 'battle of the systems' and effectively was out of the business by 1892 when the Edison General Electric Co. merged with (perhaps more accurately, was absorbed by) Thomson-Houston to form General Electric.[9] These developments involving alternating current served initially to reinforce competitiveness within the electric utility industry:

> Further improvements made it possible not only to generate larger quantities of power from a single machine at less cost per kilowatt but also to supply incandescent and arc lights and direct and alternating current motor loads [using transformers and

> rotary converters] from the same source of power. There ensued a period of sharp competition between local plants wherever there were two or more in the same distribution area.[10]

Such competition resulted in the more efficient, financially stronger, or perhaps politically more adept companies absorbing or driving their weaker competitors out of business.[11] Many large cities were left with only a single firm supplying electricity by the middle of the first decade of the twentieth century, a condition which contributed to increasing demands by the public for protection through some form of regulation.

Attaining a local monopoly, however, was not always sufficient to guarantee financial success, let alone exorbitant profits. The industry in 1902 has been described in the following terms:

> In place of large power systems, there existed small independent and unrelated companies serving a strictly local market. Service was poor, and rates were high; and customers were constantly complaining. The capital structures of these early companies were very rigid, and made the raising of additional funds very difficult.[12]

The attempt to solve problems of financing improvements and additions to capacity led ultimately to the rise of holding companies which, by the late 1920s, had consolidated a substantial portion of the nation's electric utilities into a relatively small number of large systems (only parts of which were physically interconnected).[13]

Several of the holding companies arose out of the financial practices of the major electrical manufacturers, which accepted the securities of the operating electric utilities as payment for equipment. These securities often were unmarketable elsewhere because of their extreme risk, which reflected the danger of default, in turn caused by the low and uncertain returns in the industry. Yet the electric utilities needed to improve and expand service nearly continuously and were anxious to purchase the most technically advanced equipment. Financing these transactions was a major problem for electric utilities, which had little to offer the much larger equipment manufacturers (other than their own securities). The equipment manufacturers responded by creating subsidiaries to hold the securities issued by their customers and to convert these into cash by then issuing their own securities. These securities were more marketable than the securities of the individual operating companies partly because they represented a diversified portfolio of operating companies and partly because they were associated with the better-known and presumably lower-risk equipment manufacturers. Electric Bond & Share, for example, was created as a subsidiary of General Electric in 1905.

As did most of the other pioneering holding companies, Electric Bond & Share became more than a passive financial intermediary as it developed technical and managerial expertise in the business of operating electric utilities. This expertise was used to control (or to influence strongly) the operations of the utilities in which Electric Bond & Share held an interest. This control led to standardisation, rationalisation, secure capitalisation, and to more professional management of the electric utilities. The importance of this role is reflected in the fact that a number of other holding companies evolved from firms which originally were in the business of providing management and engineering consulting services. These included Stone & Webster, H.M. Byllesby and Co., Hodenpyl-Hardy, and the H.L. Doherty (Cities Service) group.[14] Holding companies facilitated the consolidation of the industry by enabling member companies to take advantage of potential economies of scale in financing, in the creation of regional networks, or in the provision of engineering services, and possibly by contributing to more efficient operation.[15] Prior to the development of the holding company, the electric utility industry was technologically dynamic, but it also may have been economically fragile.

In addition to problems of financing, the industry faced another 'challenge' around the turn of the century, this time in the political sphere. Although there had been competing utilities in most large cities in the early days of the industry, in the smaller towns of the US the electric company was a monopoly from the beginning. The provision of electric power came to be viewed in many localities as a necessity and a 'public good'. In some cases public provision was the only alternative because dismal expected profits under private operation did not bring forth the necessary capital investment. Public ownership mitigated some of the financing problems of electric utilities since the taxing power of the local government stood behind the bonds issued for construction or expansion of the electric plant.

Of the 3,620 central stations in operation in 1902, nearly a quarter (815) were municipally owned.[16] These were located overwhelmingly in smaller towns, but several cities, including Los Angeles, Detroit, Cleveland, Seattle, and Kansas City had municipally-owned plants, some of which were in competition with private plants. The question of the appropriate form of ownership – public versus private – for firms providing basic services, including water, gas, transportation, and electric light and power, to urban dwellers was a raging issue during the Progressive era of the late nineteenth and early twentieth centuries. For electric utilities it was a political and economic issue that would continue with various permutations into the 1920s (as state regulation was applied), reach another crescendo in the 1930s when the federal government became involved in the industry, and, although muted, is one that remains alive today.[17]

An extensive contemporaneous literature emerged on the issue of public versus private ownership, and a fair share of it related to electric utilities. Much of the literature was polemical, but there also were attempts to address the issue in a more objective and rigorous manner and a number of empirical studies were produced. The cost of street lighting in cities with municipal firms commonly was compared to the price other municipalities paid to private firms for comparable service. This empirical work failed to resolve or even quell the debate,[18] but it did lead to demands for further study.

II

Responding to a call from an organisation of state-level statistical bureaux to study the issue of municipal ownership, the US Commissioner of Labor supervised an extensive survey of waterworks, gasworks, and electric light plants in 1897–98. The results were presented in the Commissioner's report for 1899. The information collected on electric utilities is extraordinarily detailed. The data were collected with great care and professionalism. As Commissioner Carroll D. Wright noted:

> The Department pursued its usual course in the collection of data, sending its special agents to the various plants throughout the country, and securing the data by their personal inspection of the plants and of the details of their business, the various facts being taken directly from the records of the plants so far as such were in existence. ... Quite a large proportion of both the private and municipal plants were canvassed, and it is believed that the data presented in the tables are fairly representative of the varying conditions found throughout the country.[19]

The report contained information on 632 private plants and 320 municipal plants, which represented 25 per cent of the total number of private plants in operation and 70 per cent of the total number of municipal plants. The plants in the survey, however, tended to be larger on average than those not reporting. The Commissioner estimated that the plants in the report represented 43 per cent of the total capital invested in private plants and 85 per cent of total investment in municipal plants. These data provide an opportunity to test several of the assertions regarding the performance of the industry that were made within the context of the historical discussion presented above.

Table 1 contains mean values of key variables for all firms included in the report and for firms broken down by type of ownership. The average electric utility was of quite modest size in 1897/98. It had a total generating capacity of 340 kilowatts (kw), just over half of which was provided by the more recently developed alternating current technology. On average just 7 per cent of electricity was generated using hydroelectric power, although firms using this technology might have represented some of the more progressive ones in the industry, given the technological challenge presented by longer-distance transmission. Still, the majority of electricity generators were driven by steam boilers (most of which were coal fired). The difference in

TABLE 1

MEAN VALUES FOR FIRMS IN THE COMMISSIONER'S REPORT, 1897/8

Technical Characteristics:

	All Firms	Private Firms	Municipal Firms
Engine or waterwheel capacity (hp)	564	735	227
Percent of power capacity hydro	7%	7%	7%
Total capacity of generators (kw)	340	452	121
Proportion of generation AC	51%	53%	48%
Average size of generators (kw)	47	50	42
	%	%	%
Incandescent lights connected (kw)	220 (64)	296 (64)	69 (64)
Arc lights connected (kw)	69 (20)	86 (18)	36 (34)
Motors connected (kw)	57 (16)	84 (18)	2 (2)
Total connected load (kw)	345	466	107
Miles of street served	21	26	12
KW connected per mile of street	18	21	12
Age of firm (yrs.)	7.6	8.5	5.9

Investment:	All Firms	% of Total	Private	% of Total	Municipal	% of Total
Land	$ 6,936	(5%)	$ 9,668	(5%)	$ 1,492	(4%)
Buildings	14,602	(11%)	20,155	(11%)	3,715	(11%)
Power plant	25,052	(19%)	33,594	(19%)	8,251	(24%)
Electric plant	25,252	(19%)	34,084	(19%)	6,685	(20%)
Dist. system	55,169	(42%)	75,957	(42%)	14,481	(42%)
Total investment	$131,114		$180,512		$34,062	
Total investment per KW of capacity	$302		$322		$261	

Costs:	All Firms	% of Total	Private	% of Total	Municipal	% of Total
Wages	$4,856	(21%)	$5,197	(20%)	$2,200	(30%)
Salaries	2,362	(10%)	3,191	(11%)	677	(9%)
Fuel	4,193	(19%)	5,429	(18%)	1,709	(23%)
Maintenance	2,195	(10%)	3,008	(10%)	597	(8%)
Depreciation	5,577	(25%)	7,705	(25%)	1,393	(19%)
Total Cost	$22,534		$30,231		$7,413	

Note: Not all firms reported figures for all categories and some minor components of investment and cost were not included in the subtotals, thus total investment and total cost (and percentages) do not equal the sum of their components.

size between the average municipal electric utility and the average privately-owned firm was substantial. Private firms had on average about four times as much generating capacity as their municipal counterparts.

There also was a large variation in the size of electric light and power plants. The smallest firm included in the report was a private firm with one 4.75 kw DC generator supplying power to three municipal and 19 private arc lights – not exactly a firm of 'Chandlerian' scale.[20] The two largest firms, both privately owned, had in place over 12,000 kw of generating capacity. Although both firms used a mix of AC and DC generators, one had over 80 per cent of its total capacity in AC, while the other had over 80 per cent in DC. Both firms provided arc lighting (used primarily outdoors because of its intensity), incandescent lighting (used primarily indoors), and stationary motor (primarily commercial and industrial) service. Neither firm provided traction service. The largest municipally-owned firm was much smaller than either of these but was substantially larger than the average for all firms, having just over 2,000 kw in generating capacity (about evenly divided between AC and DC generators).

Incandescent lighting comprised the majority (64 per cent) of the connected load for both private and municipal firms.[21] Arc lights and motors contributed the remaining load, with motors being of very little importance for municipal firms. It is especially instructive to compare the figures for total connected load to those for total capacity of generators (the third line in Table 1). It was recognised widely from the earliest days of the industry that one of the main economic challenges to electricity producers was the peak load problem. Capital in place had to be sufficient to meet the evening lighting peak, but the system sat uselessly idle most of the rest of the time. The figures for generating capacity and connected load for 1897/98 imply that on average virtually every light and motor connected to the system could be turned on simultaneously and that the demand could be met (by a substantial margin in the case of municipal firms). Any diversity in demand in the system as a whole (by time of use, for example) was not being exploited. It was possible, of course, that utilities were anticipating rapid growth in demand and were preparing for the future (at the expense of profits in the shorter run). Still, so long as this condition existed the electric utility industry was fundamentally a part-time industry – expensive capital (which was difficult to finance) sat idle for extensive periods of the day.

By 1898, the importance of attracting off-peak users was widely recognised by businessmen in the industry as one of the keys to economic survival and eventual financial success.[22] Policies to attract off-peak users of electricity had progressed by this time. They were being discussed regularly at the meetings of trade associations such as the National Electric Light Association and the Association of Edison

Illuminating Companies, but obviously had not yet had a meaningful impact on the structure of the system.

Consider as an illustration the Four Lakes Light & Power Co. of Madison, Wisconsin in 1895. The station had three Russell compound steam engines with a total capacity of around 900 horsepower (which would have made it of above average size in 1898). One engine was connected to four small Thomson-Houston arc light machines (driving about 50 lights each) and one Westinghouse alternator with a capacity of 750 lights. The second engine was connected to two 90 kw General Electric generators primarily supplying power to the Madison Street Railway Co., but also powering several stationary motors. The third engine was attached to a 300 kw monocyclic alternator used exclusively for incandescent lighting. It cannot be determined from this information whether or not the total connected load exceeded the capacity of the generators, but each generator was tied to a specific use and there was little opportunity for load management. This machinery was operated by:

> [O]ne engineer and one fireman from midnight until noon, and by one fireman, one head engineer, and one assistant from noon until midnight, and one oiler from 6 p.m. until 12 p.m., making a total of six station employees for the 24 hours' run. Each 24 hours during the week, current is furnished to the electric railway and power circuits for 17.5 hours, and to the alternating current circuits for 23.5 hours, except on Sunday, when the alternators are shut down for an additional 12 hours. Current for arc lighting is supplied principally between the hours of dusk and midnight, though certain arc-light circuits are operated all night.[23]

This may have been a relatively well-run company by the standards of the late nineteenth century, but there appears to have been little attempt to exploit any potential diversity in the load.

The difficulty of attracting capital to the industry was one of the key arguments used to explain both the existence of the municipally-owned utility and the rise of the holding company. It is shown in Table 1 that the average electric utility included in the report had a capital investment (or total assets) of just over $130,000 (around $300 per kilowatt of generating capacity), with the private firms having substantially more investment on average than municipal firms. These figures mean little in isolation but would translate roughly into $1.7 million ($4,000 per kw of generating capacity) in terms of today's dollar. Again, the variance was large. The largest private firms had ten times the capital assets of the average firm.[24] The allocation of total investment into its components indicates that over 40 per cent was devoted to the distribution system (line construction, transformers, lamps, and other devices), while land and buildings, the power plant, and the electric plant shared in about equal proportions the remaining 60 per cent.

Table 1 also presents information on costs of production (excluding taxes). Labor costs (wages and salaries combined) represented nearly a third of the total, capital costs (reported depreciation) around a quarter, fuel nearly a fifth, and maintenance and other minor costs the remainder. There appear to be some differences in the cost structures of private versus municipal firms, with municipal firms having higher wage and fuel costs and lower depreciation (capital) costs on average.

III

The data summarised in Table 1 can be used to examine several issues relating to the structure and performance of the young, and possibly fragile, electric utility industry. We begin by analysing costs, which are a critical component of the overall performance of firms in the industry, and then turn our attention to the more comprehensive issue of the profitability of the privately-owned firms in the industry. We are interested first in examining how costs varied with output to determine if there were advantages to larger size, whether certain technological characteristics provided cost advantages to firms, and whether there were cost differences based on ownership form. To address these questions we specify the following cost function:[25]

$$COST = b_0 + b_1KW + b_2KW^2 + b_3KW^3 + b_4OWN + \Sigma b_iX_i + \Sigma b_jZ_j + u$$

The model was estimated using both total cost and its major components (wages, salaries, fuel, maintenance, and depreciation) as dependent variables. Costs are hypothesised to be a cubic function of output, where output is defined as total kilowatts connected (KW, KW^2, and KW^3 in Table 2). This specification permits a U-shaped average cost curve, although it would not be surprising if most observations were on the downward-sloping portion of the curve. Ownership is measured by a binary variable (OWN = 1 for privately-owned firms, 0 for municipally-owned firms). Strong advocates of private ownership would expect this variable to be negative, indicating lower costs of production in the private sector.

X is a vector of technological or production-related variables including age of the firm (Age), average size of generators installed (AvGenSize), the percent of generating capacity that is AC (%AC), the percent of power capacity that is hydroelectric (%Hydro), and density of service (total kilowatts connected divided by the number of miles of street served). Average generator size and density of service are hypothesised to be inversely related to cost of production. Electricity generators were increasing in size around the turn of the century. Newer generators tended also to be cheaper per kilowatt of capacity.[26] Thus, one would expect a firm that used relatively fewer and larger generators (each one supplying a diversity of needs) rather than a larger number of smaller generators (with a specific purpose assigned to each one, as in the case of Four Lakes Light & Power) to have a cost advantage in producing similar levels of output. The cost advantages of a compact service area were manifest in this era. If they had not existed, electricity would have spread more rapidly to outlying areas. The direction of the relationship for the rest of the technological variables is less certain. Reliance on water as a source of power would be expected to affect the distribution of costs. Hydro installations tended to be relatively more expensive to install (hence greater depreciation costs would be expected) but would conserve on fuel costs. The effects of hydro on the other components of cost and on total cost of production is ambiguous. Alternating current systems were newer and were displacing direct current systems because of certain technical advantages, but it is not clear that AC had a cost advantage. It is not likely, however, that it had a large cost disadvantage. There also is ambiguity regarding the relationship between the age of the electric utility and costs. The older firms may have located in the most advantageous locations, but these also were probably major urban areas with higher costs. On the other hand, years of experience in the business ought to have enabled firms to achieve cost advantages due to learning by doing, hence it is difficult to predict the direction of the relationship.

Finally, Z is a vector of variables representing output characteristics. It includes the load factor (total kilowatts connected divided by total kilowatts of generating capacity), the percent of total revenues of the utility derived from stationary motor service (%MotorInc), and the proportion of revenues derived from street railway service (%RRInc).[27] Load factor should be negatively related to cost of production. The higher the load factor the more regularly the electric plant was likely to be operating, hence the greater the opportunity to smooth costs (start-up and shut-down costs would be avoided, for example). Motor load and traction service were included because these services tended to be off peak. This was thought to be business worth pursuing vigorously by the electric utilities because of this characteristic. To the extent that the business was off peak, it should have led to lower costs, especially depreciation costs since it represented fuller utilisation of the capital investment.

U is the error term. Given the large variation in size of firms, heteroskedastic errors would be expected. This was confirmed after initial estimation of the model using ordinary least squares.[28] The model consequently was estimated using weighted least squares with output as the weight. Missing values for some of the variables reduced the number of usable observations to 734. The results are presented in Table 2.

The model performed quite well. The estimated coefficients on the output variables (noting, however, that the cubed term was statistically significant only at the 12 per cent level) indicate that per unit (average) costs reached a minimum at around 8,000 kw, an output figure substantially larger than that provided by the vast majority of plants in operation, 90 per cent of which had a connected load of less than 1,000 kw. Thus, for the vast majority of plants, cost per unit declined very

TABLE 2

WEIGHTED LEAST SQUARES REGRESSION RESULTS: COST OF PRODUCTION

	Dependent Variable:					
Ind. Variable:	Total Cost	Wages	Salaries	Fuel	Main.	Dep.
Intercept	1060* (3.8)	532* (6.9)	-69 (1.1)	383* (5.2)	44 (0.7)	73 (0.7)
KW	78* (23.4)	18* (19.5)	8* (11.4)	17* (18.9)	5* (6.8)	19* (16.2)
KW^2	-.01* (2.4)	-.003* (2.8)	-.002* (2.3)	-.004* (3.8)	.001 (1.1)	-.001 (0.8)
KW^3	$6x10^{-7}$ (1.6)	$2x10^{-7}$ (1.7)	$2x10^{-7}$ (1.8)	$3x10^{-7}$* (2.7)	$9x1^{-8}$ (1.0)	$4x10^{-8}$ (0.3)
OWN (Priv=1)	413* (3.1)	-39 (1.0)	279* (9.5)	26 (0.7)	-42 (1.4)	182* (3.8)
AvGenSize	-13* (2.5)	-3 (1.9)	-.56 (0.5)	-2 (1.7)	-1.3 (1.2)	-4.5* (2.5)
Age	198* (9.6)	28* (4.9)	28* (6.2)	21* (3.8)	24* (5.3)	74* (10.1)
%AC	1.9 (1.0)	-.9 (1.6)	.7 (1.7)	.7 (1.5)	1.8* (4.0)	.5 (0.7)
Density	-50* (8.1)	-9* (5.1)	-10* (7.3)	-8* (5.0)	-3* (2.0)	-14* (6.6)
%Hydro	3.1 (0.9)	2.0* (2.1)	1.3 (1.8)	-7.7* (8.4)	.04 (0.0)	6* (4.9)
Load	-13* (5.8)	-3.2* (5.2)	-.7 (1.4)	-1.6* (2.8)	-1.4* (2.8)	-5* (6.0)
%MotorInc	30 (0.4)	-4.3 (0.2)	21 (1.4)	-15 (0.8)	-2 (0.1)	30 (1.2)
%RRInc	185* (2.9)	27 (1.5)	1.4 (0.1)	76* (4.5)	23 (1.3)	34 (1.5)
Adj. R^2	.70	.57	.42	.59	.26	.55
F	141	82	44	90	22	77

Note: t-values are in parentheses; *indicates significance at .05 level; n=734.

gently as output (lights and other apparatus connected to the system) increased. Only for the very largest plants did estimated per unit costs rise. Minimum average cost was estimated to be about $38.50 per kw, while the actual average cost was approximately $88.50 per kw, indicating that substantial per unit cost savings were available.

Privately-owned plants had higher total costs of production than municipally-owned plants.[29] This result will be surprising to some. Although statistically significant, the magnitude of the coefficient is relatively small and represents a cost disadvantage of around 2 per cent of total costs at the mean.[30] The higher total cost was due almost entirely to higher salary costs and depreciation charges.

Generator size and density had the expected negative signs in the total cost equation. Whereas greater density lowered costs nearly across the board, larger generators appeared to have had their most substantial effect on capital costs. Neither greater commitment to AC generation nor greater reliance on hydro power had a significant impact on total cost of production in this estimation. In the case of hydro generation, significant fuel savings were offset by higher wage and capital costs. Older electric utilities tended to have higher costs across the board. To the extent that experience in the business led to any 'learning-by-doing' advantages, they were not evident in the cost equation.

The load variable was negative as expected and significant. But, contrary to expectations, no significant relationship was found between cost of production and proportion of revenues derived from motor service. Relatively greater participation in providing railway service was associated with a higher total cost of production, with the bulk of the increased cost arising from higher fuel costs.

These results are instructive but illustrate only one aspect of the performance of the industry. Profits and return on investment are the measures of ultimate success or failure of firms (at least in the private sector). Were the privately-owned electric utilities in fact as economically fragile as the historical discussion above would lead one to believe?[31] We now turn to this question.

IV

Table 3 contains summary statistics for revenues and various measures of return on investment for the private firms in the Commissioner's report. Average revenues were just under $37,000 (roughly half a million dollars in today's terms). Sale of lighting services provided the bulk of revenues. Although incandescent lighting comprised 64 per cent of the connected load for private plants (Table 1), it contributed less than half of total revenues, while arc lighting, which comprised only 18 per cent of the connected load, contributed 40 per cent of total revenues. This can be explained in part by the fact that arc lights tended to be operated for longer hours than incandescent lights and thus generated more revenue per kilowatt connected. Stationary motor and electric railway service contributed 10 per cent of total revenues, although they comprised 18 per cent of connected load. This low return per kilowatt attached can be explained at least partly by the fact that rates for these services were generally the lowest offered by the utilities.

TABLE 3
REVENUES, RATES OF RETURN, AND PRICE-COST MARGIN:
PRIVATE PLANTS, 1897/98

Revenues:

	Mean	% of Total Revenue
Total Revenue	$36,766	
Incandescent Lighting	17,440	47%
Arc Lighting	14,785	40%
Stationary Motor Service	2,731	7%
Electric Railway Service	965	3%
Other	845	2%

Rates of Return on Total Investment:

	Mean	Standard Deviation
Gross Return (before depreciation and tax)	10.68%	9.39
Pre-tax Net Return (after depreciation)	4.93	9.75
Net Return (after depreciation and tax)	4.02	9.65
Price-cost Margin: (Revenues - Operating Costs)/Revenues	28.35	23.28

The gross rate of return on investment (defined as revenues minus operating costs as a proportion of total investment) was 10.68 per cent on average. This figure excludes capital costs. After depreciation charges were deducted from revenues, the 'net' rate of return became 4.93 per cent on average. Deducting property and franchise taxes caused the net rate of return to drop further to 4.02 per cent on average. The return on sales (or price-cost margin, which will be discussed more fully below) was just over 28 per cent. These returns on investment had to support both interest payments and dividends. This appears to be a rather anaemic return on investment on average, but it is helpful to put the figure in context.

The relatively poor showing of the industry cannot be explained by an adverse phase of the business cycle; the economy was expanding in 1897/98, stimulated in part by the Spanish-American War. In terms of alternative long-term investments available, high-grade railroad bonds, presumably much less risky than either the equity or debt of the electric utilities, were paying from 3.9 per cent to 4.2 per cent in 1897/98.[32] It appears that, based on the simple mean return, the arguments of those who believed the electric utility industry at the turn of the century was earning 'subnormal' returns was correct.[33] Another prominent feature of the information presented in Table 3, however, is the high variance of returns. Focusing exclusively on the simple mean return may obscure potentially interesting differences in performance. It is important to identify characteristics that made individual firms successful. There is then the question of the extent to which these were subject to managerial control.

V

Two basic empirical models have been used previously to address issues of profitability across firms or industries. For example, the effects of market concentration, advertising expenditures, or unionisation on profits have been examined by estimating either a rate of return on investment equation or a price-cost margin (rate of return on sales) equation.[34] Operationally, the two approaches are similar, and we have employed both measures of profitability as dependent variables (as well as differentiating between gross and net rates of return). We used a set of explanatory variables that is quite similar to that used in the cost model estimated previously. There is, of course, no ownership variable since the model was estimated only on privately-owned plants. In addition, we used generating capacity (in kilowatts) as a measure of size or scale in place of an output variable. In the estimation of the price-cost margin equation, the total investment per dollar of sales was used to control for relative capital intensity, as is suggested in the theoretical derivation of the model. The explanatory variables are identical otherwise. Expectations regarding the direction of relationships in most cases are simply the opposite of those for cost: anything expected to lower cost would be expected to increase the rate of return. It is especially unfortunate in this case that the locations of the plants were not provided in the report. We do not know which utilities were subject to direct or indirect competition, which may have had an important impact on profitability.

Heteroskedasticity again was found in ordinary least squares residuals, so the model was estimated using weighted least squares with generating capacity as the weight.[35] Results are presented in Table 4. The model performed quite respectably overall. The gross return and net return equations produced virtually identical results, although there are some differences between these two equations and the price-cost margin equation.

The following attributes were consistently associated with higher rates of return: larger generators (not to be confused with larger generating capacity), age of firm, and relative reliance upon hydroelectric (as opposed to steam) power. Also associated with higher rates of return, but less consistently, were firm size, commitment to AC generation, and load factor. There was a consistent negative relationship between reliance on motor income and rate of return. Neither density of service nor participation in railway service were related statistically to profitability in these estimations. In the profit margin equation, firms with high investment/sales ratios had lower rates of return.

Size (scale) alone could not be related unequivocally to higher rates of return, although it is not likely that the relationship was negative. But the fact that firms with larger generators captured higher returns indicates that some form of economy of size likely existed in the industry and that it related to the form and configuration of the generating equipment rather than simply to the amount of generating equipment.

Older, experienced firms tended to be more profitable than younger firms (in spite of the fact that they had significantly higher costs, as was shown above). The reason for this result is not obvious but tempts speculation. A strong possibility is that 'learning-by-doing' was driving the result. Experience in selling electric power led to enhanced revenues, perhaps through the adoption of more appropriate or effective pricing policies, which offset the higher costs of the older firms. Another possibility is that older firms simply were wielding the monopoly power which they were gaining over time. It also is possible that no learning whatsoever was taking place but that the first firms to enter the industry simply went to the most profitable (even though higher-cost) locations, leaving the less fertile areas for later entrants.

Hydro-generation also was associated with greater profitability. This was a technical option that to a great extent was geographically determined and usually was not subject to managerial discretion. Higher density of service did not appear to translate into higher profits, even though it was associated with lower costs. By far the most surprising result is the negative relationship between motor income and rate of return. Capturing off-peak business was felt by the leading executives in the industry to be the pathway to success, and motors were thought to have particularly good load characteristics (likewise for street railways). So the result here is the opposite of what one would expect. It is tempting to try to explain it away. Central stations were just beginning to go after this type of business. It is known that promotional rates were used to try to attract customers that were using isolated plants. It is possible that rates were below even marginal costs in the early days, which may explain this peculiar result as well as contribute at least a partial explanation for the low average rate of return in the industry.

The US Census Bureau examined the electric light and power industry in detail for the first time in 1902. After noting that the average return on investment in the industry appeared to be meagre, the writers of the report commented:

> The rate of return on the capital stock and investment of some of the oldest central station companies was and has remained far larger than is indicated by the average figures which have been

TABLE 4
WEIGHTED LEAST SQUARES REGRESSION RESULTS: RATE OF RETURN

	Gross Return	Net Return	Price-cost Margin
Intercept	-6.43* (4.1)	-11.3* (6.8)	4.1 (1.1)
Generating Capacity	.005 (0.4)	.005 (0.3)	.09* (3.2)
Average Generator Size	.18* (3.9)	.19* (4.0)	.56* (5.9)
Age of Firm	.55* (3.4)	.35* (2.0)	1.2* (3.4)
% Alternating Current	.04* (2.5)	.03* (1.9)	.04 (1.2)
% Hydro-electric Power	.13* (4.2)	.13* (4.1)	.33* (5.0)
Density of Service	.004 (0.1)	.03 (0.8)	.07 (0.9)
Load	.04* (4.1)	.03* (3.1)	.02 (0.9)
% Motor Income	-.67* (3.2)	-.76* (3.5)	-3.6* (8.1)
% Street Railway Income	-.18 (0.3)	-.16 (0.3)	-.57 (0.5)
Investment/Sales Ratio	-	-	-6.2* (15.0)
Adj. $\bar{R}^2$	.19	.16	.48
F	16.5	13 9	56.0
n	595	595	595

Note: Rates of return are as defined in Table 3; t-values are in parentheses; * indicates significance at .05 level.

cited above, figures which, if accepted as the only criterion, might well act as a deterrent against venturing into an industry generally so unremunerative. It must be remembered, however, that in some cases qualifications and explanations would forbid a pessimistic view being taken. With barely two decades of continuous

> existence, the industry is still so young that, taken as a whole, it may be spoken of as being even yet in its formative period, and a nascent period is almost invariably one of unavoidable waste and extravagance.[36]

Our empirical investigation of the profitability of the industry around the turn of the century provides evidence that is consistent with the Census Bureau view. Returns were low on average, but some firms managed to do better than others. Longer experience in the business and certain aspects of size and choice of technology conferred advantages on individual electric utilities. It is not at all clear, however, that the low overall returns were due to 'waste and extravagance' (or to managerial incompetence) in the operation of individual firms. The low returns may have been due to such unavoidable conditions as small firm size or limited ability to attract off-peak loads at remunerative prices. We found that most firms were on the downward-sloping portion of the industry's average cost curve, and that larger firms enjoyed enormous potential per unit cost savings over actual firms. These are exactly the conditions which would be expected to presage a major period of consolidation. The ability of holding companies to engender consolidation within the industry probably contributed to enhanced economic performance and helps to explain their eventual dominance of the industry.

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NOTES

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1. The first commercial Edison incandescent lighting station actually was the Holborn Viaduct station in London which began operation in January 1882. See P. Jones, *A Power History of the Consolidated Edison System, 1878–1900* (New York, 1950), p.152.
2. H. Davy, *The Collected Works of Sir Humphry Davy*, Vol. II (1839; reprinted New York and London, 1972), p.211.
3. T.P. Hughes, *Networks of Power* (Baltimore, 1983), Ch. II. Also see R. Friedel and P. Israel, *Edison's Electric Light* (New Brunswick, NJ, 1986), Ch. 7.
4. US Bureau of the Census, *Central Electric Light and Power Stations, 1902* (Washington, DC, 1905), p. 7. In addition, there were 739 electric street railway companies in operation in 1902, of which 112 offered some commercial electric service as a by-product. US Bureau of the Census, *Street and Electric Railways, 1902* (Washington, DC, 1905), p.12.
5. C. E. Neil, 'Entering the Seventh Decade of Electric Power,' (Edison Electric Institute, 1942), p.2.
6. D. F. Wilcox, *Municipal Franchises*, Vol. I (New York, 1910), Ch. VII.
7. US Federal Trade Commission, *Supply of Electrical Equipment and Competitive*

Conditions, 70th Cong., 1st Session, Senate Document No. 46 (Washington, DC, 1928), p.164.

8. P. A. David and J.A. Bunn, 'The Economics of Gateway Technology and Network Evolution: Lessons from Electricity Supply History,' *Information Economics and Policy*, Vol. 3 (1988), pp.177–79.
9. H.C. Passer, *The Electrical Manufacturers, 1875–1900* (Cambridge, MA, 1953), Ch. XX.
10. US Federal Trade Commission, *Supply of Electrical Equipment*, pp.164–65.
11. For an example of the process in Chicago see F. McDonald, *Insull* (Chicago, 1962), Ch. III.
12. N.S. Buchanan, 'The Origin and Development of the Public Utility Holding Company,' *Journal of Political Economy*, Vol. 44 (Feb. 1936), pp.33–34.
13. In 1925 the ten largest electric utility holding companies controlled just under half of total generating capacity in the US. US Federal Trade Commission, *Supply of Electrical Equipment*, p.175.
14. For a discussion of the origins of the various holding companies see US Federal Trade Commission, *Control of Power Companies*, 69th Cong., 2nd Session, Senate Document No. 213 (Washington, DC, 1927).
15. Some holding companies also engaged in what came to be regarded as notorious financial abuses (involving leverage). They, and other holding companies, paid the price both financially and politically in the 1930s. For a discussion of the events leading up to passage of the very restrictive Public Utility Holding Company Act of 1935 see P.J. Funigiello, *Toward a National Power Policy: The New Deal and the Electric Utility Industry, 1933–1941* (Pittsburgh, 1973), Chs. II–IV.
16. US Census, *Light and Power Stations, 1902*, p.7.
17. A movement to municipalise electric service was successful recently in Gilbert, Arizona, where voters approved the sale of bonds to purchase the local distribution system from the privately-owned Arizona Public Service Co. Controversies also have occurred in Albuquerque, New Orleans, and Chicago. See 'Pulling the Plug on a Private Utility,' *Washington Post* (24 Oct. 1988).
18. These early studies, which focused almost entirely on street lighting, are discussed and criticised in V. Rosewater, 'Cost Statistics of Public Electric Lighting,' *American Statistical Association Journal*, Vol. 4 (March 1893), pp. 293–303.
19. US Bureau of Labor, *Fourteenth Annual Report of the Commissioner of Labor*, 1899 (Washington, DC, 1900), p. 12. In order to assure the accuracy of the data, the Commissioner guaranteed that individual firms would not be identified in the study. While commendable in terms of assuring the accuracy of the responses, this decision also turns out to have been unfortunate for the modern researcher. It would be very useful to know the location of the plants. The original manuscripts apparently no longer exist.
20. A.D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA, 1977). Chandler discusses briefly the electric utility industry in a chapter on urban infrastructure (Ch. 6), but his major point is that no public enterprise rivaled the railroad in terms of size and complexity of operation (p.204).
21. Very little electricity was metered in the early days. Most prices were based on the number of lights connected or a suitable proxy. This means that records of kilowatt-hours produced were not kept.
22. S.Insull, 'Twenty-Five Years of Central-Station Commercial Development,' *National Electric Light Association Proceedings* (1910), p.216.
23. D.C. Jackson and A.W. Richter, 'Tests of a Combined Electric Light and Electric Railway Central Station,' *American Society of Mechanical Engineers*, Vol. 16 (1895), pp.1142–3.
24. The largest firm in the Report had a total investment of $9.5 million and was more than twice the size of the next largest firm. Twenty-four firms had a total investment over one million dollars. By comparison the total investment in General Electric in 1898 was $28 million. US Federal Trade Commission, *Supply of*

Electrical Equipment, p.59.

25. Although the Commissioner's report contained information on total wages and salaries paid, it unfortunately did not include wage rates, salaries, or number of employees. The lack of information on labour input prices, the wide variety of fuels used, and the inherent difficulty of measuring the cost of capital limits the choice of cost models that can be estimated. We have addressed elsewhere economic efficiency issues by limiting our interest to those utilities which generated electricity using bituminous coal and by using a proxy for wage and salary rates. W.J. Hausman and J.L. Neufeld, 'Property Rights versus Public Spirit: Ownership and Efficiency of US Electric Utilities Prior to Rate-of-Return Regulation', unpublished paper.
26. See Neil, 'Seventh Decade', for a summary of growth in generator size and technology.
27. The traction load was not differentiated from other types of motors in the figures on connected load, hence we chose to use revenue percentages as a substitute measure.
28. The model was estimated using SAS on an IBM mainframe computer. The test for heteroskedasticity is based on Halbert White, 'A Heteroskedasticity-Consistent Covariance Matrix and a Direct Test for Heteroskedasticity,' *Econometrica*, Vol. 48 (May 1980), pp. 817–38. In every case the chi-square value was significant at the .0001 level.
29. In a recent study of the British gas industry in precisely the same time period, Millward and Ward could find no significant cost differences between public and private firms. R. Millward and R. Ward, 'The Costs of Public and Private Gas Enterprises in Late 19th Century Britain,' *Oxford Economic Papers*, Vol. 39 (1987), pp. 719–37.
30. We tried several alternative specifications of the cost model to check the robustness of this result. We estimated unweighted unit cost (quadratic) and log-linear models. The sign and significance of the ownership coefficient was consistent with the original result in every case. Privately-owned utilities had a cost disadvantage of approximately 17 per cent over municipal utilities in the log-linear specification. Heteroskedasticity remained a problem in these specifications.
31. Most municipally-owned firms supplied street lighting and other services to the city free of charge, hence this service generated no revenues. In addition, the goals of a publicly-owned firm may differ from those of a privately-owned firm. Hence, the rate of return analysis is restricted to the privately-owned firms.
32. F.R. Macaulay, *The Movements of Interest Rates, Bond Yields and Stock Prices in the United States since 1856* (New York, 1938), p. A152.
33. Comparisons with other time periods are more difficult to evaluate because it is not always certain that comparable total investment figures are being used. However, Leonard Hyman cites a figure for 'rate on average capitalisation' for 1912 of 5.24 per cent, and the Federal Trade Commission cites a figure for 'return on total net investment' in the mid-1920s of approximately 8 per cent, indicating that improvement may have come with time. See L.S. Hyman, *America's Electric Utilities: Past, Present and Future* (Arlington, VA, 1985), p.70, and US Federal Trade Commission, *Control of Power Companies*, p.xxiii.
34. For a detailed discussion of these models see M. Waterson, *Economic Theory of the Industry* (Cambridge, 1984), particularly Ch. 10, and I. Domowitz, R.G. Hubbard, and B.C. Petersen, 'Business Cycles and the Relationship between Concentration and Price-Cost Margins,' *Rand Journal of Economics*, Vol. 17 (Spring 1986), pp.1–17. A large number of empirical studies are reviewed in L. Weiss, 'The Concentration-Profits Relationship and Antitrust,' in H.J. Goldschmid, *et al.*, *Industrial Concentration: The New Learning* (Boston, 1974), pp.184–233.
35. The chi-square statistic was significant at the 2 per cent level or better in each case.
36. US Census, *Light and Power Stations, 1902*, p.17.

GERMAN BUSINESS INTERESTS IN BRITAIN DURING THE FIRST WORLD WAR

By PANIKOS PANAYI

Between 1851 and 1910 over four million people emigrated from Germany. Although the vast majority went to America, an important minority made its way to England. By 1911, the German population of England totalled 53,324.[1] Various cities acquired important German communities including London, Liverpool, Manchester and Bradford. In addition, urban centres throughout Britain received small numbers of German immigrants, including Belfast, Dundee and Nottingham. German communities all over the country developed a rich social and religious life with clubs and churches wherever they existed.[2]

German economic activities in Britain fall into four groups. Within the first we can count employees in various occupations including teaching, at all levels from governessing to university lecturing;[3] office work, where Germans became particularly important as correspondence clerks;[4] and waiting, where, in 1911, Germans took approximately 10 per cent of positions in London restaurants.[5]

Germans also became important as small retailers in various fields – for instance in tailoring, although not on the same scale as Russian Jews.[6] Many pork butchers' shops throughout the country were owned by Germans. In London Germans became particularly important as hairdressers and bakers. With regard to the former, two German clubs came into existence by 1900 which acted as meeting places for barbers. At the same time, an official of a master bakers' society believed that 'one half of the London Masters and certainly one half of the operatives are Germans'.[7]

In addition to becoming small retailers, some Germans established business concerns on a large scale. The founders of major firms entered Britain before the 1870s and in many cases their concerns became purely British, although this did not prevent the development of hostility towards them during the Great War. In some instances the houses had originally become established when a representative of a German company made his way to Britain. Thus, we can give the example of J. Henry Schröder and Co., the merchant bank originally founded in London in 1818, and controlled by the German-born Bruno Schröder upon the outbreak of the Great War.[8] On the other hand, Sir Ernest Cassel entered England in 1869 with little money but by 1914 became established as an international financier with interests covering many fields.[9] It is difficult to estimate the exact number of British firms with German origins, but others included Kleinwort, Sons and

Co., and Schuster, Sons and Co., which was taken over by the Union Bank of London in 1888. As Stanley Chapman has shown, there were over 150 German merchant houses in provincial towns by the 1850s. By 1870, Manchester alone had 153 German firms with interests in textiles, chemicals and banking.[10]

The fourth category of German economic interests in Britain consisted of the branches of multinationals established during the Victorian and Edwardian periods. These covered a variety of fields. In the chemical industry, for instance, Hoechst opened a plant in Ellesmere Port which produced nearly all of Britain's indigo. The Berlin firm of Siemens & Halske established a branch in London in 1858 for the purpose of manufacturing telegraphic equipment, cables and instruments. The London establishment had considerable independence and upon the outbreak of the Great War in August 1914 the British firm of Siemens Brothers severed all links with the German Siemens & Halske.[11]

In finance, three of the major German banks established offices in London. The Deutsche Bank opened a branch in 1873. Its main business consisted of accepting bills of exchange, mostly on German account, and financing imports and exports to and from all parts of the world. The branch also 'transacted all other types of banking business'. It participated in many Stock Exchange flotations, a side of its interests which increased in importance until the turn of the century. In 1873, the annual turnover of the Deutsche Bank London Agency totalled £4 million. By 1900 this figure had reached nearly £642 million and in 1913 it climbed to £1,062 million, according to the Deutsche Bank Archivist. 'Against all expectations, the London branch became larger than any other'. As well as the Deutsche, two other German finance houses opened offices in London – the Dresdner in 1895 and the Disconto Gesellschaft in 1899.[12]

Hostility had begun to develop towards Germans and their business interests within Britain during the late Victorian and Edwardian years. For instance, they endured some of the animosity which manifested itself in the East End of London and eventually led to the passage of the Aliens Act of 1905. Propagandists claimed that the newcomers affected the economic position of Englishmen.[13] Much of this hostility was directed towards Russian Jews, but specifically anti-German immigrant hostility became evident in the form of suspicion of employees in various trades, such as clerks. Propagandists believed that office workers acted as 'spies in the service of the enemy'.[14] In addition, animosity towards Germans and their business interests also developed because of the rising economic strength of Germany from the end of the nineteenth century. For example, much of the Tariff Reform League's propaganda was directed against Germany.[15]

Inextricably linked with the rise of economic hostility was the development of sentiment against the growth of German military and naval power; it was directed by the radical right, an unorganised, but clearly identifiable, group of MPs and journalists driven by hatred of Germany and suspicion of German-Jewish influence within Britain. There also developed a fear of German spies which manifested itself in the appearance of popular novels on the subject, letters to newspapers, and speeches by MPs. But prewar anti-German sentiment did not result in any violence or government measures against Germans and their property.[16]

It is something of a truism to say that the First World War meant state intervention in Britain on an unprecedented scale. In many cases the government acted in the interests of national security. This was the rationale for the passage of the Defence of the Realm Act, and the Orders in Council which resulted from it. The state also claimed that its intervention was necessary to ensure the more efficient prosecution of the war on the home front. This would explain the early measures taken to control the railways and suspend trading on the Stock Exchange. It also led to the establishment of new Departments such as the Ministry of National Service and the Ministry of Food.

Government policy towards enemy aliens, however, was not guided by considerations of national security or the efficient prosecution of the war. There were exceptions, notably the early moves to introduce limited internment and to control the activities of Germans by the use of Orders in Council passed under the Aliens Restriction Act. But in general it was public hysteria about the activities of imaginary German spies that guided government policy. The result was internment and repatriation on a vast scale,[17] the confiscation of property and the winding up of German businesses.

Writing in 1923, C.R. Hennings claimed that the treatment of German property during the war was guided by the motto *'Vernichtung und Aneigung'* (annihilation and acquisition).[18] While this may not have been the aim of politicians, public and civil servants in 1914, this objective had become widespread by the conclusion of the war. Attitudes hardened as the war progressed and the government had to introduce new measures to calm public opinion. The radical right played a major part in directing the attitudes of the populace. Members of this group had taken an active role in the tariff reform campaign during the Edwardian period, and the Great War presented an opportunity to strike a blow at German businesses. All of them, from branches of major German banks in London to local bakers of German nationality, were represented as a threat to Britain, and by the end of the war the government had been persuaded to take steps to deal with enterprises of all sizes.

One authority estimates that 'at the outbreak of war enemy subjects living in Great Britain and in other countries had wide ranging business interests, with estimated and real property worth well in excess of £100 million'.[19] Measures were taken to deal with German enterprises in Britain immediately after the commencement of hostilities. On 10 August, an Order in Council under the Aliens Restriction Act prohibited enemy aliens from engaging in banking without the express permission of the Home Secretary. This measure would have closed the German banks. However, this did not happen, as they managed to obtain licences which allowed the completion of banking transactions entered into before the outbreak of war. These could be carried out only under the direction of a Treasury-appointed controller, Sir William Plender. He, in turn, appointed an official supervisor to act on his behalf at each of the banks.[20] At the same time, any unnaturalised German employee needed to obtain official permission to continue in his position if it involved dealing with financial transactions.[21] Furthermore, many enemy aliens working for German or Anglo-German banks faced internment, although during the early months of the War Sir William Plender 'secured special immunity' for the staffs of the Deutsche, Dresdner, and Disconto Gesellschaft.[22]

The Trading with the Enemy Acts became the most important measures dealing with German property in England. The original Trading with the Enemy Proclamation of 5 August 1914 forbade transactions with a person resident in the German Empire. But there was 'no objection to British firms trading with German or Austrian firms established in neutral or British territory'. Furthermore, trade could take place with branches of enemy firms in neutral or British territory as long as no transaction took place with the head office. However, from September 1914 the government could appoint inspectors to look through the books of firms suspected of trading with firms in enemy countries. Subsequently, supervisors could be appointed on a longer term basis. The Trading with the Enemy Amendment Act of 27 November 1914 also created custodians of enemy property in England and Wales (the Public Trustee), Scotland and Ireland. The custodians received share dividends due to an enemy and could take control of other enemy property. They could also pay, out of the sums seized, money owing to British creditors. Another Trading with the Enemy Amendment Act, of 29 July 1915, required the custodian to be notified of bank balances, deposits or debts due to enemies.[23]

The legislation up to this date clearly did not affect an enemy alien resident in Britain. He had every right to continue his business as long as he had registered under the Aliens Restriction Act, and did not trade for the benefit of anybody in any enemy country.[24] However, much public attention focused upon the fact that branches of German firms continued to trade in Britain. The Sheffield Chamber of Commerce, for instance, asked the Home Office to introduce legislation which remedied this situation. The Central Executive of the Employers' Parliamentary Association made a similar request.[25] Meanwhile, the Pianoforte Manufacturers' Association claimed that there existed 32 German piano companies 'trading in this country, either directly' or through an agent. This organisation clearly regarded the war as a chance for British piano firms to establish themselves. Similarly, in the oil business Shell faced much criticism because of connections with Germany.[26] Many companies of all descriptions used their British nationality as a weapon in advertising campaigns. For example, the Wolsey Underwar Co. produced an advertisement directed 'To British Women' which stated that, 'In the matter of underwear it is especially important that womenfolk should know what they are buying for there is a great deal of "unmarked" German-made underwear about'.[27]

Pressure from British companies led to the Patents, Designs and Trade Marks (Temporary Rules) Act, which made it possible for any person to apply to the Board of Trade for the suspension of a patent granted to an enemy alien, allowing the applicant to carry on the relevant manufacturing process. It emphasised that 'it was not the object of the Act to confiscate property of alien enemies, but merely to suspend their rights under reasonable conditions'.[28] Two years later, the Trading with the Enemy (Copyright) Act provided that the copyright in all works first published or made in an enemy country during the War would be vested in the custodians of enemy property.[29]

From late 1915 until the end of the war a series of measures were introduced which drastically altered the early legislation with regard to the position of enemy aliens trading in Great Britain. Before discussing these, however, we need to turn to the ways in which 'unofficial' developments helped to eliminate enemy business interests in Britain. By this we mean the action taken by numerous trading bodies to expel German members and, more seriously, the widespread attacks upon German property. The latter events took place on five main occasions: August 1914, October 1914, May 1915, June 1916, and July 1917.

The first disturbances in this sequence remained quite minor. They involved sporadic attacks upon German shops in east London.[30] A slightly more serious riot developed in Keighley when local residents stoned pork butchers' shops owned by Germans.[31] The first major outbreaks of violence against German retailers occurred in October 1914, and affected Deptford and other areas of south London. The disturbances took place during the first peak of anti-German hostility consequent upon the rapid advance of the German armies through Belgium and the atrocity stories which surrounded their movement. In addition, local factors also contributed, particularly the arrival of 800 Belgian refugees in Deptford. Violence occurred in this district on 17 and 18 October, when thousands of people destroyed German-owned shops. Smaller disturbances also broke out in Lee Green, Brixton, Old Kent Road and Catford. They resulted in about 60 arrests. A week after these events crowds destroyed pork butchers' shops in Crewe.[32] Also in October 1914, hotels throughout the country sacked their German employees.[33]

The most serious anti-German disturbances occurred in May 1915 during the period of hysteria following the sinking of the passenger liner, *Lusitania*. Although many Unionist politicians blamed the violence upon the German submarine which torpedoed the ship, the

Liberal view, which held that the newspaper reporting of the incident was responsible, seems more accurate. Typical headlines included: 'Loss of 1,457 Lives in the Lusitania. Germans Gloat over the Murder of Women and Children'.[34]

The violence began in Liverpool on Saturday 8 May, the day after the sinking of the Lusitania, and continued in the city until Tuesday 11 May. Many thousands of people participated with the result that over 550 shops were damaged at a cost of at least £40,000. Hundreds of people were arrested. Manchester was the second city to experience disorder, although not on the same scale.[35] Violence became especially serious in London where practically every metropolitan borough experienced disorder. In all, the London riots led to 866 arrests. They resulted in damage to almost 2,000 properties at a cost of nearly £200,000. Although German houses came under attack, newspaper accounts of the riots and the court proceedings with regard to those rioters arrested show that German retail establishments suffered in particular. For example, over 150 German bakers came under attack, resulting in a temporary bread shortage in the capital.[36]

The *Lusitania* riots became truly nationwide. In south Yorkshire, for instance, Mexborough, Denaby, Conisborough, Goldthorpe, Sheffield and Rotherham all experienced disorder between Monday 10 May and Saturday 15 May. Other towns which experienced violence included Hull, Greenock, Bury St Edmunds, Newcastle, South Shields, Neath, Castleford, Walton-on-Thames, Ipswich, Winchester and Blyth.[37]

The riots of May 1915 were accompanied by milder manifestations of anti-German feeling. For example, strikes took place against German employees in Sheffield, Oldham and Ancoats. Meanwhile, the Stock Exchange instructed members of German and Austrian birth 'not to attend the House until further notice'. The Baltic Shipping and Mercantile Exchange took similar action as did the Metal Exchange, the Manchester Royal Exchange and the Cardiff Exchange. The London Chamber of Commerce requested 'all German and Austrian members, whether naturalised or not, to resign'. In addition, major financiers of German origins faced press attacks. Sir Edgar Speyer suffered more than most, but Sir Ernest Cassel and Baron Bruno Schröder also endured hostility.[38]

After May 1915, however, only a few minor outbreaks of violence against German property occurred. The reasons for this seem obvious. Firstly, there was the fact that so many German shops had already been destroyed. And, secondly, few enemy aliens remained free following the introduction of wholesale internment and repatriation in May 1915. There were, however, anti-German incidents in various parts of London in June 1916 and July 1917.[39]

Although the surviving records do not reveal the exact extent of the damage to German property as a result of the various anti-German riots, it is clear that these disturbances had done much to eliminate small German traders. However, also important in this process was a series of government measures from late 1915. The first of these, the Trading with the Enemy (Extension of Powers) Act of 23 December 1915, allowed the issue of Royal Proclamations prohibiting trade with persons of 'enemy nationality or enemy association' resident in Britain or allied countries. A blacklist of such firms was compiled and frequently amended. It was much extended on 18 July 1916 by the addition of names from the neutral world, including many from the USA.[40]

On 27 January 1916 the Trading with the Enemy Amendment Act became law. This deprived enemy aliens of the right to trade in Great Britain. By this time ideas had gained ground concerning 'alien penetration into ... commercial, industrial and financial enterprises'.[41] The new Act empowered the Board of Trade to wind up or prohibit from trading, except under certain specified conditions, any company in the United Kingdom 'carried on wholly or mainly for the benefit of or under the control of enemy subjects'.[42] A controller could be appointed to ensure the implementation of the Order of the Board of Trade. An important provision meant that any Order issued would not simply last for the duration of the war. Inspectors and supervisors acquired powers to seek out enemy firms and their assets which would be vested in the custodian. In addition, enemy aliens could not involve themselves in share dealings or reap the profits from them.[43]

On 9 February 1916 the Board of Trade appointed an Advisory Committee with a view to deciding which companies should receive winding up orders. The Committee considered reports from inspectors and communications received by the Board of Trade and other Government Departments, as well as allowing owners or managers of a business to appear before it. The first session took place on 22 February, and by March 1918 139 sittings had occurred. By this time 960 cases had been dealt with, of which 507 had resulted in winding up orders and 174 had not. The rest remained in various stages of consideration. This clearly indicates that the Committee by no means made a clean sweep of enemy businesses, as many anti-aliens would have liked. For instance, in the case of small retailers, the Committee usually obtained guidance from a report by the local police, which, if favourable, meant that a winding up order was not issued. Where an enemy had a son fighting in the British armed forces his business received sympathetic treatment. However, the Committee did not recommend exemptions merely because Germans 'have been resident in this country for a long period of years, have married British wives, are the fathers of children who are British born subjects, and whose record was in other respects unimpeachable', although it may have looked favourably upon German subjects who had lived in England from the 1870s and 1880s but had neglected to become naturalised. A great variety of cases were considered 'from the Siemens business with a capital employed of over £2,000,000 and the Badische Co. Ltd., with an annual sale of £354,000 of dyes to that of a tailoring business with a profit of £150 a year'.[44]

Measures were also taken to deal with Germans who had changed their names. Under the Aliens Restriction (Change of Name) Order of October 1914 enemy aliens could not use names which they had assumed before the outbreak of war. Attention was particularly focused upon Germans who had changed their trading names. For instance, an article in the *Globe*, a Conservative newspaper, spoke of the 'essentially crafty, unscrupulous nature of our enemy' who wanted 'no better privilege than to be able to conceal himself under an English name, so that he may steal English trade'.[45] Such attitudes must have influenced the passing of the Registration of Business Names Act in December 1916. This required the registration of all British firms whose names did not consist of the true surnames of the partners or individual owners. Registration was also required of a business which had changed its name. In addition, each partner of a firm had to reveal his present and any former nationality. Furthermore, no company could use the word 'British' in its title if it was wholly or partly controlled by aliens. Offices for registration were established in London, Edinburgh and Dublin. Section 18 of the Act required each firm or individual on the register to indicate on all business letters and cards the present and any former nationality, if not British, of all individuals or partners.[46]

In 1917 the Companies (Particulars as to Directors) Act required firms to file with the Registrar of Companies particulars with regard to their directors similar to the details of partners of a firm under the Registration of Business Names Act.[47] Then, in 1918, regulation 14H of the Defence of the Realm Act instructed any individual or firm which had changed its name since the outbreak of war to revert to its original name.[48]

Despite the various measures taken against enemy trading up to the middle of the war, attention still focused on the continued existence of both small retail businesses and larger concerns. Some critics claimed that Englishmen who owned shops joined the army while people of 'enemy alien origin' still traded and consequently secured the customers of retailers who became soldiers. The government ignored such assertions[49] until February 1918 when the Retail Business (Licensing) Order was 'made by the Director General of National Service under Regulation 8AA of the Defence of the Realm Regulations'. This prohibited the opening of retail businesses or branches of existing ones, without a licence. Although this measure did not originally aim at aliens, the Ministry of National Service always tried 'to find some reason for refusing a licence to them'.[50]

Meanwhile, the continued presence of the German banks in London led to widespread criticism of the government. By the middle of the war a widely accepted myth circulated about a German 'Hidden Hand' which was said to control all sections of the British 'establishment' including the civil service, the armed forces and the financial system.[51] With regard to the last of these, critics particularly focused upon the German banks in London. For instance, Sir William Joynson-Hicks, the radical Unionist MP, described the Deutsche Bank as 'the greatest financial organisation which has been established in Germany for many years past'. He claimed that when the War was over the employees of the Deutsche Bank would return to the head office in Berlin 'with all the information that they have acquired as to English trade and English finance'.[52]

In late 1916 'a vigorous movement arose, especially in London, to eliminate the residue of German influence in finance and trade'. Ministers faced volleys of questions in Parliament.[53] The government reacted to the criticism directed against it when, on 20 December, the Treasury appointed a Committee to look into the position of the London establishments of the German banks. This produced a report which supported the existing policy, praising Sir William Plender and the supervisors and pointing out that the liquidation of an international bank involved a lengthy process under normal circumstances which became more complex during a time of war.[54]

Nevertheless, despite the findings of the report, criticism of the government for allowing the banks to continue their activities did not subside. Therefore, at the end of 1917 Sir William Plender issued a second report. This again pointed out that the banks continued to carry out the limited operations within the scope of their licences, 'confined to the closing of transactions resulting from business undertaken before the war, in disposing as far as possible, of the assets and securities held for safe custody, and in collecting the income thereon'. The report emphasised the difficulties in completing transactions, first identified by the committee appointed by the Treasury in the previous year. It also pointed out that inadequacy of staff hampered the pace of work. It had proved impossible to replace the original German and Austrian employees owing to the 'enemy origin of the Banks and the dislike to enter their service'.[55]

Throughout the course of the war much attention also focused upon the 'German Metal Octopus'. This referred to the apparent control by Germans of the international lead, copper and zinc industries. Because of this, William Morris Hughes, the Labour, but fiercely nationalistic, Prime Minister of Australia, claimed that Germany killed Englishmen with bullets made from Australian ores. Hughes asserted that his government had done something to escape from 'the octopus that controlled the metal market ... by giving three months' notice to every company to strike every German off their register, whether naturalised or not'. He wanted Britain to take similar action.[56] In fact, the British government did not attempt to control the metal industry until early in 1918. The Non-Ferrous Metal Industry Act, passed in February of that year, took steps to eradicate German influence. The legislation made it necessary for anyone involved in this trade to obtain a licence. However, no licences would be issued, without special permission of the Board of Trade, to companies which had even the slightest connection with Germany or enemy aliens. The hostility to and legislation against the 'German Metal Octopus' played a large part in the foundation of a British zinc smelting industry.[57]

Hostility towards German banks and businesses reached a peak in the summer of 1918, a time of intense Germanophobia consequent upon the success of enemy armies on the Western Front following General Ludendorff's Spring Offensive. MPs again called for measures to close the German banks. In addition, a series of trading bodies, including the Liverpool Cotton Association, the Cement Makers' Federation, and the Nottingham Lace and Net Finishers' Association, decided to boycott Germans for 10 years. Meanwhile, an Aliens Committee, established at this time to look into the whole question of German 'influence' within Britain, recommended the closure of all German businesses within three months, and the immediate winding up of 'all branches of enemy banks'.[58]

The War Cabinet considered the question on 10 July 1918, and Sir Albert Stanley, President of the Board of Trade, stated that legislation would be introduced to prevent businesses of any kind, including banks, being carried on in Britain for the benefit of alien enemies for a specified period of years after the war. This would 'put an end to economic penetration by the enemy' and prevent German businesses emerging at the conclusion of peace.[59] Shortly afterwards, the detailed report of the Company Law Amendment Committee appeared. The Board of Trade had appointed it in February 1918 and it supported the new Cabinet policy. The Trading with the Enemy (Amendment) Act, passed on 8 August, both strengthened the 1916 Act and contained many new provisions. The most important of these prevented an enemy controlled company 'from carrying on banking business for a period of five years after the end of the war'.[60]

Hennings described the Trading with the Enemy Acts as '*ein Meisterwerk von Vernichtungsmassregeln gegen das deutsche Eigentum*'.[61] R.F. Roxburgh provided a more detailed summary when he wrote that:

> By degrees the Government had laid its hands upon all German property within its reach. By the end of hostilities much of it had been collected in the hands of the Executive, and neither the owner nor any other person could deal with it, except by leave, without incurring heavy penalties. Business owned or controlled by Germans had been searched out, and for the most part closed down. Many companies under German influence had been put into liquidation. The proceeds, after payment of debts, charges and expenses to the extent authorized by the Acts, had in many cases been distributed among the persons entitled; but the share of enemies was in the hands of the Custodian.

When the peace treaty was signed it declared that 'German influence in trade was to be uprooted, in the United Kingdom'. The government had the right to retain and liquidate all German property within the British Empire, which formed a fund out of which part of Germany's reparation payments could be recovered. However, although the owner might 'suffer involuntary dispossession', he would receive compensation from the German government as agreed under the Treaty of Versailles. German owners could not receive former property in excess of £500. They could obtain information about the sale of their possessions through the 'German Office' in London.[62] Some major British companies were virtually created from the sale of German assets in Britain, such as the English Electric Co. which bought Siemens Brothers Dynamo Works. GEC, meanwhile, purchased 'from the Public Trustee ... the shares in the Osram Lamp Works hitherto registered in the name of alien enemies'.[63] At the same time, the Anglo-Persian Oil Co. purchased British Petroleum, a subsidiary marketing organisation of the Europische Petroleum Union of Bremen. This gave Anglo-Persian a marketing subsidiary in Britain.[64]

The treatment of German property during the First World War helps to explain German reluctance to establish foreign subsidiaries in the 1920s. It was not only Britain which seized German business interests but also Russia, France, Italy and Belgium. Sweden, however, had not entered the First World War, and German property there had remained untouched; consequently firms continued to invest there in the 1920s.[65]

How do we explain the draconian measures taken to deal with German business interests in Britain during the Great War? We can offer three possible explanations. First, we can see them as part of the general extension of government activity in the interests of a more efficient prosecution of the war. This provides the reasoning behind the provisions of the early Trading with the Enemy Amendment Acts, the decision to limit the transactions of the German banks in London, and even the introduction of the measures requiring the registration of businesses. However, such reasoning cannot explain the closure of shops of small German traders or the decision to prevent Germans from entering into banking business for a period of five years after the end of the war. Neither does it tell us why the British government 'laid its hands upon all German property within its reach'. The succession of Cabinet Ministers responsible for enemy businesses responded to the demands of a hostile public opinion.

We therefore need to ask what motivated public opinion behind which lay the press and extreme sections of the Unionist party and various other groupings which grew out of it. Was it a desire to secure German property, born from the economic hostility to the rapid industrialisation of Germany during the late nineteenth century? This had led to much animosity during the Edwardian period and had played a large part in the development of the tariff reform campaign. Many of

TABLE 1

ESTIMATES OF GERMAN PROPERTY IN THE UNITED KINGDOM IN 1917

	£ million
Retained dividends	3.5
Property	58.3
Investments	27.2
Debts due to enemies or bank balances due to them	18.5
	107.5

Source: PRO, BT 11(a).

those who called for the seizure of German business interests in the Great War desired tariff reform. These included Henry Page-Croft, William Joynson-Hicks and Leo Maxse. However, economic hostility formed only one aspect of the fear of Germany.

The overwhelming motivation of the anti-Germans was hostility towards German military and naval power which represented a threat to Britain's dominance as a major world force. We can only fully understand the destruction of German property in Britain, by a combination of rioters and government measures, if we place it into the context of the rampant Germanophobia during the Great War. Hostility towards enemy business interests formed just one aspect of the hatred of all things German, which included culture and, most importantly, human representatives of the enemy within Britain's shores. It was not only German property which suffered but also Germans themselves through a policy of wholesale internment and repatriation which meant that the German population of Britain declined from 57,000 in 1914 to 22,254 in 1919.[66] During the Great War, one of the rallying calls of the anti-aliens demanded 'the Extirpation – Root and Branch and Seed – of German control and influence from the British Empire'.[67] As a result of the terror and subsequent vindictiveness caused by the possibility of defeat by Germany, this became a reality.

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NOTES

I would like to thank Geoffrey Jones and Jon Press who did much to help me transform this article from the original paper I presented at the 1989 Economic History Conference at Exeter University.

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REVIEW ARTICLE

THE BRITISH AND AMERICAN MOTOR INDUSTRIES

MARTIN ADENEY, *The Motor Makers: The Turbulent History of Britain's Car Industry* (London: Collins, 1988. Pp.377. £14.95).

JAMES FLINK, *The Automobile Age* (Cambridge, MA: MIT Press, 1988. Pp.456. $25).

STEPHEN WILKS, *Industrial Policy and the Motor Industry* (Manchester: Manchester University Press, 1988. Pp.388. £9.50).

In recent years the motor industry has generated a great deal of literature and each of these books, although comparatively very different, is a welcome addition to the subject literature.

Martin Adeney has tried what so many others have attempted with varying degrees of success; that is to produce a reasonably comprehensive history of the British motor industry. This he has achieved to a limited extent. In the preface, Adeney claims that he found this to be a fascinating and dismaying experience, and his book makes it abundantly clear why this was so. In its beginnings the UK motor industry depended heavily on the Germans and the French for its first models and later on the Americans for the skills of mass production, while sheltering behind import duties for half a century to ward off foreign competition. Even when natural genius was expressed, as in Rolls Royce and the BMC Mini, British companies all too often lacked the basic commercial acumen to translate this into profitable success. Moreover, there appears to have been a touch of arrogance, tantamount to divine right, among British entrepreneurs that Britain made the best cars if only others would appreciate it. Ingrained was a belief that exempted the British from following the kind of practical business behaviour expected from foreigners. The British, it is argued, were very good at conceptual engineering, but had to take second place when it came to producing efficiently and effectively. Such shortcomings were summed up by John Egan when he quipped that the standard performance of a British car company in the 1970s was to do badly and go out of business

Adeney's approach to this tale of woe is a highly conventional chronology, arranged in fourteen chapters which, as the author admits, are by no means exhaustive in their coverage. The two opening chapters consider the earliest days of the industry and the pioneering firms. The industry is perceived as originating in the cycle and engineering industries generally, but its development was held up not only by the Red Flag Act, but more significantly by prejudice against it and by the small numbers employed in that type of engineering. The impact of this was that in its early days almost every detail of automobile construction had to be imported from continental Europe, especially France. The book adeptly displays how much early British manufacturers depended upon foreign expertise and developments before going on to analyse in some depth the promotional and financial activities of Harry Lawson as well as of others such as Herbert Austin, R.W. Maudsley and F.W. Lanchester. The changing technology of vehicles is given reasonable coverage as the industry expanded with some 220 concerns coming into being between 1901 and 1905. Despite this Adeney takes great care in pointing out the commercial weaknesses that existed, typified in the Argyll Co.'s palatial building folly at Alexandria which led to massive over-capitalisation and ultimate collapse in 1914. Sharp contrasts are made with the advent of Ford to Trafford Park in 1911 with an emphasis on organisation, coherence, order and regular movement of production.

The First World War is dealt with succinctly and explains the role of the manufacturers in the war effort. More significantly, stress is laid on how the war provided experience of mass production and a need to rely increasingly on home-based resources, thereby reducing dependency on Europe, while at the same time sheltering under the protection of the McKenna duties. Chapter five explores the inter-war years which a little misleadingly projects automobile manufacture as a 'new industry'. This analysis is conventional and adds very little that is new to our knowledge. Considerable emphasis is laid on the move to smaller cars, changes in technology, the importance of the merger movement and increasing concentration, culminating in the emergence of the Big Six. The fortunes of the major firms are discussed with clarity, charting the growth of the Austin and Morris empires in the 1920s, the near collapse of Ford in the same decade and its revival in the 1930s, the advent of General Motors and, finally, the rise of Standard and Rootes as major forces in volume production. Besides the domestic market with its emphasis on model competition, Adeney highlights the importance of export markets, but points out that behind the buoyant statistics lay an over-dependency on the imperial market, with very little penetration of either the European or American markets.

The following three chapters focus on the specialist car manufacturers (Jaguar, Rolls Royce and MG and so on), the component makers and the workers. The discussion on labour is a little disappointing in that while it contains the usual references to labour being recruits from all parts of the country, the high wages paid, seasonal lay-offs, backed by a rather weak discussion of trade unions, there are no references to the First Shop Stewards Movement, the Workers' Union and the 1922 Engineering Lock-out. Indeed, much of the work by Tolliday, Zeitlin and Lewchuk in this field appears to have been ignored.

The final chapters focus on the period from the Second World War to the present. The role of the industry in the Shadow Factory Scheme and the munitions effort is given clear exposition, but Adeney is quick to assert that success was mixed and that the war reflected organisational weaknesses within the industry, exemplified in the government's decision to remove development of the Jet engine from Rover because of the chaos that existed in its Shadow Factory. Similarly, the increasing role of the trade unions is laid out clearly, but perhaps the most significant conclusion of the war was that the industry was too important to be left exclusively to the manufacturers and that henceforth the government would play a greater role in its development. It is in these last four chapters that Adeney's initial fascination gives way to dismay. The late 1940s and 1950s were a period of economic success for the industry. Production grew consistently, exports boomed and by 1950 Britain had overtaken the United States as the world's leading exporter of cars. All of which led to high profits and a swelling of the numbers employed. By the end of the 1950s even British design, typified by the Mini, reigned supreme. Within this though lay the canker of decline; markets, especially for exports, were soft, profits were turned into insufficient investment, while the drive for production led to sacrifices in quality to the extent that when foreign competition hit the industry, its deficiencies were exposed cruelly.

To counteract weakness, Adeney shows how the merger movement that began in 1951 with the fusion of Austin and Morris into BMC culminated in 1968 in the government sponsored merger between BMC and BMH to create British Leyland. In many ways this sounded the death knell for the indigenous industry. By 1974–75 the new entity was virtually bankrupt, having failed utterly to rationalise its plants, its workforce and its models and was in dire need of government funded rescue through virtual nationalisation. The weakness of BL contrasted starkly with the strides made by Ford whose approaches to production and the market oozed professionalism in comparison with BL. By 1975 the government found itself lumbered with two virtually bankrupt concerns as the American multinational, Chrysler, which had taken over the ailing Rootes Group in the previous decade, threatened to quit the UK unless it received government aid. In examining these issues, Adeney covers familiar ground, including the Chrysler rescue package, and is highly critical of the ill-conceived, over-optimistic Ryder Report and its subsequent failure, leading to Michael Edwardes' arrival at BL and his Recovery Plan. He illuminates both Edwardes' strengths and weaknesses, but notes how opinion on his achievement is split as BL's market share continued to fall despite new models.

In the final chapter and conclusions the wheel, it appears, has come full circle. Despite the apparent success of the privatised Jaguar, the UK motor industry is again very dependent on foreign capital and expertise not only through Rover's essential links with Honda, but with the ever increasingly integrational global car policies of both Ford and General Motors to say nothing of Peugeot's buy-out of Chrysler and the coming of Nissan to Washington. The conclusion is that at least for the time being such policies will help to maintain Britain's role as an important car manufacturing centre.

All in all this is a solid piece of qualitative analysis, which is helped by a racy prose style, but there is a dearth of statistical data. There is not a single table in the book, which is a pity with the much data available to highlight trends. Similarly, despite the claim to the contrary, there does not seem to have been a great use of company records, while the footnotes and bibliography are totally inadequate for a book of this nature. On a positive note, however, there is an excellent use of interview material.

James Flink's *The Automobile Age* is quite different from Adeney's book in that while the bulk of it focuses on the American industry, considerable attention is devoted to Europe, Japan, the Eastern Bloc and the Third World. Moreover, this is a work of scholarship distilled over a period of 35 years, and displays an enviable command of the complexity of the industry, the culture it has generated and the social and political consequences of the automobile on life-styles.

Divided into 20 chapters, Flink's book begins by acknowledging how multinational were nineteenth-century attempts to develop powered automobile transport. Due tribute is paid to the moves through steam and electric powered vehicles to the development of the internal combustion engine. In particular, chapter two focuses on the efforts of Daimler, Levassor and Panhard in France and how British pioneer firms such as Argyll, Singer, Crossley and Austin availed themselves of the benefits of Continental European technology. European progress, Flink claims, stimulated developments in the United States; so much so that by 1895 some 500 motor related patents were on file, with companies such as Duryea, Olds, Maxim and Winton appearing on the scene. Emphasis is laid on the simple fact that the great majority of the more important figures in the early days had enjoyed no formal training in engineering, but were drawn from bicycle and carriage manufacturers, machine shop operators and other odds and ends.

By the turn of the century the industry had gravitated away from New England and settled in Ohio, Indiana and Michigan with Detroit becoming the focal point of development. This area had ample supplies of wood, an existing gasoline-station network and abundant unorganised labour. Detroit was an open-shop town, and by 1903–4 the area accounted for 42 per cent of total US output. Amid a favourable climate of public opinion, the alliance of business ability and technical skills that characterised the industry by 1908 produced a fairly reliable car with considerable potential for reaching a large market. This idea was seized upon by Henry Ford and resulted in the construction of his Highland Park factory at Dearborn with its crude assembly lines producing the Model T. Flink devotes considerable space to Ford and Fordism and points to American superiority in machine tools, production engineering and higher per capita income in explaining why the American industry expanded so quickly in the opening decade of the century; he also poignantly compares the organisation at Highland Park with the craft shop structure at Longbridge in England. By 1910 the days of the freewheeling car-making entrepreneurs were over and the industry fell increasingly under the sway of a small number of firms, led by Ford, General Motors and later Chrysler. All were large concerns which required high levels of capital investment to foster their development which not only consolidated their position, but which deterred others from matching them. As Flink points out, many of the smaller companies were absorbed by merger, though not always with conspicuous success, as typified by the problems of General Motors under William Durrant just before the First World War.

Straddling discussion of the role of the industry during the Great War, Flink analyses in some detail the rise of General Motors and Chrysler before embarking on the experience of the inter-war years. The recession of 1920–21 hit the US industry hard. As well as putting a number of firms out of business, it hit Ford seriously, forcing him to close down between Christmas 1920 and February of the following year. Ford's policy response was ruthless. Vehicles were forced upon dealers who would not sell them, unnecessary equipment was sold off and the work force pruned with Charles Sorenson, Ford's hatchet man, appearing to take pleasure from firing people.

The recovery came quickly enough and, for most of the 1920s, prosperity was enjoyed across the industry. By 1927–29 the market appeared to have been saturated, a process that was aided by heavy advertising and hire purchase. The interwar period, though, saw Ford lose ground to General Motors and even Chrysler. Ford's autocratic style of management is contrasted with Alfred Sloan's multi-divisional management at General Motors. It was Sloan who forced a new competitive spirit with frequent model changes and facelifts to emphasise product differentiation to move away from the static Model T. Despite this the period was one of technological stagnation at home, but of physical expansion abroad by both Ford and General Motors. Yet for Flink the emphasis lies in the way in which the personal automobile helped bring about a transformation in American life. The car was an instrument of social change. It not only removed equine excrement from the streets as a source of disease and so helped improve urban amenities, but hastened the move to suburban dwelling and eased rural transport problems. Much of this is highlighted in contrasting case studies of the impact of cars on Southern California and Atlanta. Like the Church, the car became a focal point of family life. On the one hand, it helped reduce parental authority over teenage children, especially concerning courtship, while on the other, it helped the middle class woman escape the confines of the home, allowing more widespread shopping and socialising, so adding to female self-confidence.

The two decades after the Second World War saw the grip of the Big Three Companies became even firmer in the American market, but, as Flink shrewdly observes, their product was disappointing. Competition between the Three was reduced to economies of scale, style and sales and service networks. Quality and safety were sacrificed for comfort, and even when smaller compact vehicles were produced in the 1960s they gradually got larger, earning the sobriquet 'fat pigs'. As part of his analysis, Flink explains how the European industry recovered after the war and acknowledges the contribution made by American companies to this, but concedes that in terms of technology and fuel efficiency the Europeans were ahead of the Americans, especially in the 1960s.

The final chapter examines the rise of Japan and successful Japanese penetration of the American market as well as offering a brief survey of production and markets in the Third World and Eastern Europe. Finally, despite the impact of the oil crises of 1973 and 1979 on the industry, Flink concludes on a remarkably up-beat note. While emphasising that the automobile as a major source of growth and economic development has probably come to an end, he sees the advent of computer aided design, engineering, production and eventually of computer integrated manufacturing as the technology that will drive the industry into the next century when it will still be a major influence on our lives.

Stephen Wilks' revised *Industrial Policy and the Motor Industry* differs from the other two books in that it deals with a central issue: the relationship between the government and the industry. Of the three books this is by far the most demanding and intellectually stimulating. The study is set within the wider context of what industrial policy is, who makes it and how it is implemented. Central to the first three chapters is an analysis of how British industry has suffered at the hands of successive governments in recent decades. For Wilks this is due largely to the lack of a coherent industrial policy in general, the precedence given to ingrained belief in the autonomy of the firm, emanating from a weak 'state' tradition, and the prominence given to international finance capital in government which has hindered the banking system from organising domestic industrial capital. This was exacerbated by the adversarial political system of the 1960s and 1970s which created a problem of leadership at high levels when dealing with industrial problems. These, of course, were not helped by the natural aversion of British industry to accept intervention. In other words, the market was the dominant force in Britain's industrial economy, which meant that government policy towards industry, typified by the Chrysler and BL rescues, was based on crisis *ad hoc*ery.

Building on this thesis, Wilks argues that between 1960 and 1970 the motor industry suffered from pernicious macroeconomic policies whose effects were noted, but not taken on board by government and the bureaucracy. The events of the 1970s, however, forced a compromise between the élite establishment and imperatives of intervention in a combination of doctrinal and bureaucratic policies under both Labour and Conservative administrations. Chapters four to ten are an outstanding, clearly presented, in-depth analysis of the car industry which, after a wide ranging review of the industry in the 1960s, explores the significance of the industry for economic policy and how it was affected by it directly and indirectly, as well as by the experiments of indicative planning and the growing expansion of American multinationals. This is followed by a case study of British Leyland's rescue under Ryder and the triumphant pragmatism of the Chrysler rescue. More importantly, Wilks reflects carefully on the implementation of government policy, particularly during Michael Edwardes' time at BL, and offers a critical review of his legacy. Chapter nine outlines the growing internationalisation of the industry and the problems that poses for the UK govrnment, which has to bargain with the multinationals if Britain is to remain an internationally credible producer of motors.

In a new chapter in which the period since 1984 is reviewed Wilks also examines his earlier analysis, and it is to the credit of his earlier scholarship that most of this has endured. The major difference is that adversarial politics have receded in the light of successive years of Conservative government: a period that has witnessed the virtual abdication of government responsibility for the industry with the doctrinal urge to privatise British Leyland (the Rover Group) in search of satisfying the market ethic. The book ends with a somewhat gloomy prognosis, hoping that in time the industry, now dominated by the multinationals, might stabilise, but this will require a policy reversal and serious government co-operation, and Wilks is not hopeful.

Finally, though very different in aims, objectives and styles of presentation, each book makes a significant contribution to our knowledge of business history in the widest sense, and really ought to be read by anyone with an interest in this very fruitful field of research.

Coventry Polytechnic TOM DONNELLY

BOOK REVIEWS

OLIVER WOOD, *West Cumberland Coal, 1660–1982* (Kendal: Cumberland and Westmorland Antiquarian and Archaeological Society, Extra Series XXIV, 1988. Pp.ix + 277. £15).

This is almost literally a life's work. Dr Wood's Ph.D. thesis was completed in 1952, and he has continued to gather material on the West Cumberland coalfield ever since. Of its kind, this is practically a definitive history. The history of the coalfield is chronicled in the minutest detail, statistical tables are painstakingly assembled and meticulously presented, and the book is therefore indispensable to serious researchers on the economic history of the coal industry. It is cast firmly in the empirical mould of the early 1950s, and it has little to say about the miners' lives and organisations, although there is entertaining material about the mineowners and their agents. Dr Wood is an eager describer and compiler, and he holds aloof from theoretical constructions and applications, and from sustained comparison with other coalfields. Explicit references to recent interpretations of the history and influence of the industry at large are at a premium. But this is not what the book is for. It is intended as an exhaustive presentation of data, and as such it is a monumental and successful piece of work. Similar compilations and narratives for other districts would be very useful indeed to those who need a full and reliable database as a starting point for their own enquiries. In this context, it is a pity that there are so many typographical errors, although the book as a whole is handsomely produced. Dr Wood has placed his fellow-historians of coal and Cumbria in his debt.

University of Lancaster JOHN K. WALTON

JOHN R. WARD, *British West Indian Slavery, 1750–1834: The Process of Amelioration* (Oxford: Clarendon Press, 1988. Pp.320. £30).

British West Indian slavery has often been seen in Hobbesian terms, with life for slaves being (even more than elsewhere) 'nasty, brutish, and short'. The slave economy of the islands has often (with some recent exceptions) been portrayed in terms of long-run depletion of resources, failure to innovate, and an inevitable movement towards ruin. John Ward's careful, well-documented, and significant study provides a measure of revisionism both on the Hobbesian and the 'decline' theses. Ward asks whether slave regimes are capable of innovation, asks how much innovation and improvement took place in the British West Indies in response to the severe problems experienced from the 1760s, and asks why the advances made were not enough to impress Britain and save slavery.

Ward finds that between the 1760s and 1833 significant innovations were made, the quality of labour was improved, output per slave increased, and slave mortality fell. Indeed, he concludes that by 1830 output per head was equal to that of British workers during the classic pioneering period of the Industrial Revolution, and suggests that, in quantity at least, West Indian slaves by 1830 had diets equal to those of many British workers. This is not, however, revisionism on the scale which, in the 1970s, Fogel and Engerman's controversial *Time on the Cross* attempted for North American slavery (and which claimed for antebellum America a system of great efficiency, profitability, and rather high slave morale). Ward's study gives important discussions of productivity and demographic performance, but makes no claim for West Indian slavery, especially where sugar was produced, being anything other than the severest of regimes.

Ward defines 'Amelioration' broadly – taking in not only the idea that slave vital rates and treatment might have improved in the period of abolitionist campaigns from the 1780s onwards, but also the idea that from about the 1760s there might have been a general attempt by planters to combat adversity and improve both crop productivity and the demographic rates of slaves. His discussion of agriculture is detailed and well informed; it focuses on the Leeward Islands, Barbados, and Jamaica, and concentrates especially on the dominant sugar crop. He finds technical innovations to have been made in the milling process and plant strains, but he especially emphasises the increased acreage given over to livestock and to slave allotments. Increased livestock numbers meant better manuring and better crops, while increased provisions from allotments meant better diet and lower slave mortality. The examination of slave demography is closely argued, and is set on the context of a considerable secondary literature. Ward argues that fertility improvements were limited (especially since pregnant and nursing women still did heavy field work); but adult mortality rates fell. Deficiency diseases continued to be very common, but improving diet was reflected in a disappearance of the mortality peak in the traditional 'hungry months' (June to September). The improved life expectancy, he argues, was not simply a reflection of the disappearance, after the ending of the Atlantic slave trade in 1807, of losses due to the 'seasoning' of new slaves. Ward suggests that there is some evidence of a growth of moderating and even humanitarian influences among masters, and gives hints of a slight easing in slave punishment; but these suggestions, probably wisely, are not pushed very far.

This is not a study of slave communities, slave mentalities, or the ideologies of masters or of the abolitionist movement in Britain. But in the areas on which it concentrates – productivity, innovation, and demography – it brings forward very valuable evidence and arguments. The concern with enterprise during adversity, innovation (in what Adam Smith had seen as an unreformable institution), and the involvement of primary producers in the complex forces of international trade, will be among the chief areas of significance of this study for business historians. Overall, John Ward gives qualified support for the thesis of amelioration in the later years of West Indian slavery. He is not in this study closely concerned with the complex forces which ended slavery. As in American, however, it appears that the planters' continuing profits (even if in the West Indian case at lower rates than in the mid-eighteenth century) were not enough to save slavery. Shifting vested interests in industrialising societies, mixes of economic and other ideas concerning progress, and slave pressure, would triumph even over slave regimes which showed some capacity for 'amelioration'.

University of Liverpool MICHAEL TADMAN

CHARLES MORE, *The Industrial Age: Economy and Society in Britain, 1750–1985* (Harlow: Longman, 1989. Pp.xi + 449. £9.95, paperback).

This book is an introductory text on the economic and social history of Britain since 1750 aimed at both students in higher education and the general reader. Half the book deals with the period prior to 1914 and the rest with the twentieth century. The five sectional divisions are allocated respectively three to economic history and two to social history, although the latter do include subjects like income and consumption, wealth and poverty. The book comprises a large number of chapters, 36 in all, which are very short, seldom more than ten pages. This provides the distinctive characteristic of the book in that it contains a series of cameos, condensed resumés of major topics. There are a few curious omissions; for example, Williamson's provocative but important thesis that military spending during the Napoleonic Wars crowded out industrialisation is not mentioned. The choice of topic and the treatment provided is fairly conventional. Chapter headings such as agriculture, population, trade, and manufacturing will be generally familiar. The book ranges widely in subject matter, specifically devoting attention to social as well as economic subjects, so that there are chapters on the family, work and leisure, class, and trade unions.

Concentration on a large number of topic surveys does mean that the book tends to lack cohesion and it is difficult to find a theme which integrates the components into a single thesis. This weakness is compounded by the fact that, as so often in such histories, the topics which provide the focus in one part do not receive continuous treatment throughout. In the section on the twentieth-century economy, economic policy, quite reasonably, receives considerable attention while industry and agriculture are merged into a single chapter. Regional and structural problems appear as a twentieth-century phenomenon only. Two survey chapters provide the main interpretation, although there are comments and observations indicating preferences of interpretation throughout the book. Chapter 9 discusses the hypothesis of industrial revolution and supports the currently fashionable emphasis on very gradual change. Chapter 23 concentrates on change and decay during the past century and blames senior management for much of the ill suffered by industry and the economy. It also offers a variant to the Wiener thesis that Britain was weakened economically by an anti-business culture by adding that the low esteem in which education was held (as reflected in educationalists' pay!) resulted in a poorly trained workforce. A third survey chapter, 17, deals with the fall from economic supremacy and fills in the mid-Victorian gap between the two main survey chapters.

The strengths and weaknesses of the book are quite apparent. It provides a competent, informed and sensible set of summaries of major topics free from technical jargon. But the fragmentation of treatment into a large number of small and discrete topics makes it difficult for the uninformed reader to obtain an overall view, especially as there is no review of competing explanations save a good précis of the Lazonick and Wiener perspectives on recent problems. The separation of economic from social subjects is also rather strained, as evidenced by the inclusion of income and consumption in the latter sections only. The strength of the book lies in its pithy summaries, and this is likely to prove attractive to students. Those who teach introductory courses on the history of British economy and society are likely to find chunks of this book appearing in essays, especially those dealing with standard topics.

University of Aberdeen C.H. LEE

ERIC HOPKINS, *Birmingham: The First Manufacturing Town in the World, 1760–1840* (London: Weidenfeld & Nicolson, 1989. Pp.222, illus. £20).

This thorough synthesis of the literature has produced a highly readable and well illustrated monograph. The blend of analysis, description, anecdote and apposite quotations from contemporary inhabitants and observers contained in this book should ensure an enthusiastic reception from students of local history. Chapters deal with the economy, industrial structure, organisation and change, with middle and working classes and the culture of urban society.

The key factors explaining Birmingham's industrial growth include important improvements in hand technology before 1760, especially the introduction of the stamp, press, lathe and drawbench, and the adoption of an advanced division of labour. Throughout the period 1760 to 1840 the gun trade was central to growth and fluctuation, particularly during the wars with France. By 1800 the gun, brass and toy industries had been joined by others using both non-ferrous and precious metals, glass and papier mâché, while the products made of iron and steel became more diverse. By 1840 brass and jewellery were the leading industries, supplying consumer goods for a wide range of purposes.

Whereas the broad contours of Birmingham's urban industrial growth are well known, the chronology of development remains unclear. On this subject the text is confusing. The 1820s, excepting 1825–26, are described as a period of recovery, and the 1830s to 1837 as one of boom and diversification, yet Dr Hopkins characterises the period between 1815 to 1840 as one of depression even though numerically years of depression barely exceeded those of prosperity. With some notable exceptions, including Boulton and Watt's steam engine factory at Soho, industry in Birmingham was characteristically small in scale and offered easy entry, features of industrial structure and organisation which have long been regarded as fundamental to any explanation for the town's relatively harmonious class relations. With some reservations concerning insufficient evidence to support a revisionist interpretation, Hopkins broadly accepts this analysis. How adequate is such an interpretation, however, if, as is argued strongly throughout the book, in terms of its industrial structure and organisation Birmingham was typical rather than the exception?

In placing Birmingham's history into a national context Hopkins castigates the 'traditionally minded' for accepting a model of industrial change in which the power-based factory organisation of the iron and cotton industries is central; the norm of industrial growth, he maintains, was to be found in Birmingham, rather than Manchester. It is true that recent attempts to quantify the use of power and the extent of large scale and factory production has clarified the limited importance of power-based manufacture before 1840. However, it is misleading to present an (anonymous) traditional view of industrial revolution as inconsistent with that offered in this study. Writing in 1926, Clapham acknowledged that technical revolution and factory organisation were exceptional in industries other than cotton textiles and iron, at least until the mid-nineteenth century. He described Manchester's *social* conditions as typical of growing industrial towns, the consequence of rapidly rising population and inadequate response to housing and sanitary needs, regardless of local technologies or modes and scale of industrial organisation. Employing mainly secondary sources, therefore, Hopkin's account confirms, rather than re-interprets, a view of the industrial revolution which has a long history.

University of East Anglia ROY CHURCH

CYRIL EHRLICH, *Harmonious Alliance: A History of the Performing Right Society* (Oxford: Oxford University Press, 1989. Pp.x + 183, illus. £19.50).

In the recent interest of social historians in the entertainment industries none more than Cyril Ehrlich has shown that business history rightly embraces showbusiness. His work on the piano and the music profession is well known and here he turns his attention to the Performing Right Society.

By the late nineteenth century England had the largest piano ownership in Europe with a massive demand for sheet music with annual sales of 20 million copies. Yet the composer lacked status, confidence and organisation. Moreover most music publishers betrayed, in Ehrlich's view, classic 'British disease' symptoms – small family units, conservative, distrustful of innovation and outside recruitment. Yet it was the leading publisher William Boosey who had the insight that *performing* rather than publishing rights could actually be the more valuable to composers. A strong Copyright Act (1911) opened the way and in 1914 the Performing Right Society was founded by publishers and composers to defend their interests and reap the rewards of all forms of public performance.

There was an obvious resultant clash of interest. All manner of music-using dance teachers, amateur choirs, hoteliers and restaurateurs with background music resented the new restrictions and charges. The Musicians' Union especially was at loggerheads with the PRS fearing declining work. The vast market for live musicians in the silent cinema of the 1920s belied their fears (Ketelby's 'In a Persian Market' contributing to his £1,500 a year performing fees in this decade). The decline of sales of printed music and the use of the radio and the gramophone record forced all the publishers to band even more closely in 1926. In the Second World War music was the 'lubricant of industry' with the PRS keenly establishing its rights and seizing opportunities over the playing of factory 'music while you work'.

In the postwar years of the 1940s and 1950s matters flagged. The PRS represented the ageing composers of 'light music' although youth preferred American imports. Many composers turned to alternative Guilds of Composers (1944) and Songwriters (1947) while the BBC continued to exploit composers as shabbily as it did actors. But the 1960s saw the beginning of explosive growth and change. The Beatles (who joined PRS in 1963) 'initiated profound changes'. Individual earnings of musicians soared and young pop idols came alongside the old 'light music' guard to vitalise the PRS, whose receipts trebled in 1965–75, and quadrupled again in 1975–85. Even the BBC negotiated a fairer contract with the PRS in 1971 – 'a triumph after years of underpayment'. The new wider role of the PRS in big business was crowned by the Queen's Award for Exports in the same year.

Professor Ehrlich tells his story with customary wit and style and almost always with clarity – though I was not altogether clear on the legal background to the activities of con-man Harry Wall and I did not fully understand the issues of the 'Tuppenny Bill' (1929–30) from this account. Professor Ehrlich's book supersedes earlier studies of the PRS. It is fuller, more up to date and more genuinely grounded in social history than C.F. James (1951) and G. McFarlane (1980). The theme appears at first sight to be of a narrowly specialised interest. Yet the virtue of the book is in showing how this has inevitably reflected and been shaped by social and industrial change during the century. It must also be the first book to be reviewed in this journal to encompass not only that noted would-be LSE economist Mick Jagger, but also 'Boy' George O'Dowd.

University of East Anglia MICHAEL SANDERSON

MARTIN GASKELL, *Harry Neal Ltd.: A Family of Builders* (Cambridge: Granta Editions, 1989. Pp. 176. £14.75).

This history is a celebration in which Martin Gaskell surveys the growth and diversification of Harry Neal into an important regional building firm in the metropolis, through three generations of the family. The founder, Harry Neal, started as a foreman to a developer in Kilburn, built a house for himself, then moved on to build blocks of little two-storey houses in Cricklewood. In the early years of the century he moved up-market to Northwood, building houses costing up to £5,000. As speculative building stopped during the First World War he worked on contracts for McAlpine's and gained experience of a larger scale operation. Both wars were in fact to prove a forcing ground for different experience; in the second it was government contracts, for example, building airfields in different regions. The business became a limited company in 1923 with Harry and son Godfrey as directors, and with the help of the Westminster Bank it constructed entire estates, and public buildings at Northwood, Hendon Central and Wimbledon. In line with contemporary employer strategies (studied by Melling) site foremen were given powers to sack on the spot for misdemeanours and permanent staff were paid higher rates to secure loyalty.

The Northwood developments were typical metroland, large leafy plots with rustic Tudor houses costing up to £20,000. However, the firm kept a flexible attitude to the market and still built the standard £550 semi; other projects included public houses for Benskins and one of the largest cinemas in the country, the Gaumont State in Kilburn which could accommodate 8,000 in seats, lounges and restaurants.

The Second World War gave Neals an experience of standardised building rather than high quality custom work, and this experience was put to use when economic restrictions ended in the mid-1950s. Changing the scale of operation also brought changes to organisation. The purchase of Charles R. Price meant a purpose built headquarters at Kingsbury and a staff of contract managers, indeed the speed of technical change in the 1960s sometimes outpaced the ability of managers. The firm became in effect a group of companies with particular skills and of specialised craft departments. In the 1970s expansion proceeded from acquisition of further specialised craft companies. The maintenance and expansion of in-house craft departments meant that high class work could be closely controlled. Postwar building has meant Harry Neal Ltd. has left its mark on Stevenage New Town's centre, London University, in the City and West End and in the recent Docklands developments (at Tobacco Dock for example). The old tradition of firm paternalistic labour relations continues, so that 27 per cent of the workforce have been with the firm for 20 years or more.

The book is handsomely illustrated but is incomplete as business history, for the emphasis is on the family and the buildings, both clearly a matter for pride. However, questions of capital, profits and finance are discreetly vague. There is a touch of the 'Heritage industry' approach with emphasis on the positive aspects of the company's history as a long and successful progression.

University of Exeter J.H. PORTER

R.P.T. DAVENPORT-HINES and GEOFFREY JONES, (eds.), *British Business in Asia since 1860* (Cambridge: Cambridge University Press, 1989. Pp.301. £35.00).

It is particularly useful for the business historian to have generous coverage of British trading activities in Asia since 1860. The editors have wisely included Russian Asia, Iran and Thailand in addition to India, China, Japan, Malaysia and Singapore in their treatment. The eight contributors already have well-attested expertise in the geographical areas to which they address themselves here.

Business relations in Asia in the nineteenth century depended initially on confrontation, as British imperial power, represented by the ships and men of the Royal Navy, forced the countries of Asia to open their doors. Part of the interest in this book is in the responses of the indigenous communities to the British and ultimately to the importunate merchants. The nationals of some countries took up adversarial positions, others co-operated; none could remain neutral. The Japanese were particularly successful in containing the foreign merchant and the foreign banker. By conceding the Treaty Ports on Japanese soil in 1858 they accepted a necessary evil. Only in later years did it become apparent that the concessionary ports were not bridgeheads over which the foreign merchant could advance into the rest of Japan but zones of seclusion to which he was restricted. After 1899, when the Treaty Ports reverted to Japan, the Japanese benefited greatly from the modern port infrastructure which the foreigners had largely created.

But the shock of the British intrusion did start a process of change. And the British can be given credit for demonstrating administrative efficiency, business good sense and the value of a coherent management structure. They were, before 1914, despite the many criticisms levelled at them, in some senses the engines of modernisation.

After 1918 matters were rather different. In India local indigenous merchants and manufacturers learnt well the lessons taught by the British and became themselves increasingly confident about production and distribution. In Iran the government took on the role of ousting the British by encouraging locally owned businesses. In Asiatic Russia, British interest was primarily in the raw materials to be produced by Russian extractive industries. Trading and financial connections, broken by revolution in 1917, were difficult to re-establish partly because of British suspicions of both barter agreements and buy-back clauses – pushed by a Russian government chronically short of foreign currency. The Americans and the Japanese were keen competitors for this trade. In China, competition from the Americans, Germans and Japanese pushed the British hard. The dynamic business communities of Chinese, active in many parts of Asia, other than China, are discussed in several chapters. In Malaya and Singapore, where Britain had been responsible for initiatives in tin mining, the development of rubber plantations and banking, international business began to make headway although the British still remained important. In Thailand, British pre-eminence remained reasonably intact until the second world war for they continued to demonstrate there a wide variety of British run businesses covering a wide spectrum of commercial opportunities. The Australians were also significant here.

The notes for each chapter are detailed and informative but it would have been of assistance to the reader or researcher to have had a select bibliography of the literature available.

University of Glasgow OLIVE CHECKLAND

SIDNEY POLLARD, *Britain's Prime and Britain's Decline: The British Economy, 1870–1914* (London: Edward Arnold, 1989. Pp.xii + 324. £25).

The lesson which Professor Pollard draws from his study of the British economy of the late Victorian and Edwardian periods is clear and unequivocal: 'the faults of the decline after 1945 are not to be shuffled off to earlier generations; they remain firmly the responsibility of those who controlled Britain's economic fortunes in those years'. According to Pollard, the British economy had weaknesses and shortcomings before 1914 but 'as events were to prove, it was capable [during the First World War] of acting as the launching pad for astonishing industrial progress and technical, scientific and organisational pioneering efforts under much more difficult conditions than those which had tested its mettle before 1914'. Above all, the British economy before 1914 is seen to be suffering not from decline but (if suffering is the right word) from a process of catching up by other economies, and it was natural that some of them would overtake Britain because of their superior resource endowments; though in economic analysis resource endowment is a somewhat question-begging concept.

In coming to this judgement, Pollard cites approvingly Saul's stricture that 'shifting comparative advantages ... [and] shifting patterns ... make it very dangerous to look back before 1914 to determine the long roots of Britain's current industrial problems'. But both in terms of logic and plausibility, the case for the British economy before 1914 does not have overwhelming appeal. In short, are Britain's economic failings of the interwar period which followed to be explained largely (or entirely) in terms of the period itself? Or is it argued that those failings were not that serious anyway? An examination of the behaviour of businessmen during and immediately after the First World War, for example, reveals a pattern of attitudes and actions which had enormously deleterious effects on subsequent economic performance; and it seems clear that this lamentable record fully matched the standards of Victorian and

Edwardian best practice. Furthermore, recent work on the response of the British economy to the demands of total war does not support Pollard's buoyant judgement.

Whilst Pollard's thesis might not carry conviction, the value of his book is nevertheless substantial. It consists of four, largely self-standing chapters: Economic Growth and the Varied Industrial Scene; The Export of Capital; Education, Science and Technology; The Role of the State. The erudition one has come to regard as Pollard's hallmark is here in abundance. The bibliography is stunning; and it is evident from the text that Pollard has read everything it contains. Each chapter provides excellent surveys of the main issues and debates, interspersed with shrewd observations and stimulating comments.

For business historians, the most interesting chapters are those on education and the state. In the former, Pollard contrasts the structured and rigid German system with the haphazard, freewheeling nature of British education. The theme is 'formality' versus 'originality'; though the dead hand of the classics lay heavy on both forms. Pollard goes out of his way to stress the adaptability of English education (and, incidentally, challenges the alleged superiority of the Scottish system) in order to argue the case that education did not fail business but, rather, business got the education it demanded. Whilst he shows awareness of the inherent circularity of this relationship he does not acknowledge the dominant influence of the major public schools and Oxbridge. In part, this dominance was a matter of the social value placed on the subjects they offered; in larger part it related to the nature and form of the institutions themselves – to what might be termed their institutional ethos. It was this institutional conditioning which had such a powerful influence on the attitudes and behaviour of successive generations of the business élite. Pollard's evidence does nothing to undermine the view that, by contrast, the institutional ethos of German education was more conducive to successful economic performance. Moreover, this comparative failing *has* developed into one of 'the long roots of Britain's current industrial problems'. Even today, the public schools continue to dominate the upper reaches of British higher education and to infuse them with an ethos which still draws heavily on pre-1914 traditions. In consequence, it is natural that the City of London (with its ritual of the 'big bang') should be the temple of the 1980s enterprise culture.

The main conclusion to emerge from Pollard's analysis of the state concerns the failure in Britain to adopt 'national' as opposed to 'liberal' policies. The latter, with their emphasis on free trade and competition, favoured commerce and finance to the detriment of industry: 'the new high-tech, growing industries on which future development should have rested were ... treated with particular lack of understanding and helpfulness'. Once again, the contrast is drawn with Germany. The argument has much in common with that which stresses 'institutional blockages' as the barriers to the emergence of a corporate economy in Britain in this period along US lines. Pollard does not, however, explicitly define the state (though he really means central government) and his discussion is correspondingly somewhat diffuse. In particular, he does not examine the nature of the bureaucracy – an obvious area for comparative analysis between Germany and Great Britain. Moreover, he takes no account of the apparent contradiction between this rather traditional view of industrial arteriosclerosis and his overall stress on flexibility and adaptability.

In his conclusion, Pollard implicitly recognises that the statistical data he has surveyed so comprehensively are somewhat difficult to fit into the mould in which he wishes to cast the British economy. Likewise, his analysis of other ranges of evidence does not convincingly support his attempt to rescue the Victorians and the Edwardians from the obloquy poured upon them by past and present economic historians. For all this, his attempt to do so makes for essential reading.

University of Bristol B.W.E. ALFORD

JOHN GARRARD, *The Great Salford Gas Scandal of 1887* (Manchester: British Gas North Western, 1987. Pp.97. £2.50).

Scandals are interesting not only for what they reveal about the individuals concerned; they also have wider implications. There is inevitably an element of *voyeurism* involved, but when broader issues are exposed our baser human weaknesses can be excused. The case of Salford's gas scandal in the 1880s, according to Garrard, is an excellent illustration of the need to study the darker side of business in order to understand the nature of contractual relationships in the worlds of commerce and local government. In particular, the failure of Salford Corporation's gas engineer, Samuel Hunter, to win his libel case in 1887 against a coal contractor's allegations of corruption disclosed the seedy and supposedly ubiquitous practices involved in bribing customers. Hunter was later to spend time in prison for his part in the system, but as Garrard points out many felt that this was unfair, not least because the only sin he had really committed was breaking the eleventh commandment. One should also note that until the Public Bodies Corrupt Practices Act of 1889, the bribing of municipal officials was not a criminal offence. The change in the law, incidentally, was precipitated more by the widespread corruption within the London Metrpolitan Board of Works than the events in Salford, but Hunter's demise substantiated the arguments of those demanding greater control.

There are three general conclusions which Garrard draws from the Salford case: firstly, that councillors were very much dependent upon the advice provided by their permanent officials; secondly, that gas engineers were as much a professional group as they were entrepreneurs in their own right; and thirdly, that corruption was a commonplace in nineteenth-century business circles. The first two points tell us more about the nature and increasing size of local government in the late nineteenth century, and the growing importance of municipal trading, but as business historians the third is far more interesting and its implications ought to be analysed in some detail. If, indeed, the system of 'tipping', or paying customers' agents a commission for awarding contracts, was so pervasive, then surely we ought to bring this into a consideration of marketing and salesmanship in this period. Garrard actually argues that in a number of areas, from central and local government to industries like cotton, engineering, building and railways, often the main reason why contracts were secured was the payment of a commission to the manager concerned. This puts a whole new slant on the study of competitive advantage, and in the light of Garrard's thesis, business historians must turn away from indicators of productivity or research expenditure and look at the size of slush funds as a better guarantee of sales. Certainly, contemporaries were well aware of the system, and if one can believe the large amount of newspaper correspondence generated as a result of this scandal there were many who wanted to see it terminated. This, however, emphasises the impressionistic nature of the evidence, because apart from the cases where corruption was proved (in London, Wigan and Salford) we are left with unsubstantiated comments culled from correspondence columns. The number and breadth of these letters indicates that bribing was common, but until a detailed study of these practices has been completed we can never be sure just how extensively they affected business strategy. As Garrard admits, the objectivity of the correspondents is often questionable, and even Hunter's accuser was later shown to have been one of the main perpetrators in the system.

It is, then, the insight into local government and its gas operations which are the most useful aspects of this study. Although no detailed analysis of the department's performance is offered, and the implications of overstocking are ignored, it is useful to know just how powerful the permanent officials had become by the 1880s. Municipal trading was a common feature of North West local authorities by this time, and if men like Hunter were given a completely free rein in managing these large enterprises then the nature of democracy is called into question. Councillors, it would appear, were more than willing to delegate responsibility for strategic decision-making to these professionals, and rarely did the elected officials even understand such issues as pricing and depreciation. Garrard's short piece brings this story alive, and we await with interest his broader study of the gas engineering profession. Perhaps he might also be able to interest British Gas North Western in his new venture as well, because this company's venture into publishing reflects its genuine desire to see the industry studied objectively and extensively. The format and style of the book is more in the pamphlet mould, but when it results in pieces of such quality at an affordable price then we can only look forward to more publications from this source.

University of Manchester J.F. WILSON

STEPHANIE JONES, *Trade and Shipping: Lord Inchcape, 1852–1932* (Manchester: Manchester University Press, 1989. Pp.xvi + 222. £29.95).

The focus for the second volume in the Manchester University Press Series, *Business and Society*, shifts from the electrical world to that of maritime enterprise. It charts the career of one of Britain's leading shipowners, James Lyle Mackay, better known as the first Earl of Inchcape. From modest beginnings in London and India with the Mackinnon Mackenzie shipping agency, he eventually came to control the P & O and BI lines, the Mackinnon/Inchcape groups, as well as holding key positions in many other companies. In addition to which he led an extremely active public life by sitting on innumerable committees and providing services to the government.

Dr Stephanie Jones has written a lively account of his career: a little racy and journalistic in parts; in others a little short on background detail and analysis; but at all times stimulating and entertaining. She obviously has a certain sympathy for her subject, though this does not preclude criticism where due. What is never in doubt is the clear portrayal of the man and his work which emerges from reading the volume.

Luck and hard work, together with a certain degree of ruthlessness, were clearly instrumental factors in enabling Inchcape to rise to such prominence. Despite limited education, he had innate abilities and drive to succeed at a time when it was still possible to get to the top without elaborate formal education and training. He certainly achieved some spectacular successes before 1914, though one cannot fully judge his efficiency and enterprise without similar studies of comparable tycoons in the industry.

After a successful war service in the shipping field, including the sale of many surplus ships on behalf of the government, Lord Inchcape shows signs of faltering. He displayed less confidence when grappling with the more demanding postwar conditions. Possibly this explains the resort to some ingenious creative accounting in order to mask the deteriorating position of P & O. Nostalgia for the prewar world and his ultra conservative views made him reluctant to move with the times. He may even have been too burdened with committee work, for some of which he was clearly unsuited, to spare sufficient time for running his businesses. Whatever the reasons, his postwar performance does reinforce many of the strictures made by Sturmey in his study of the shipping industry.

University of Leicester DEREK H. ALDCROFT

ROBERT CLAYTON and JOAN ALGAR, *The GEC Research Laboratories, 1919–1984* (London: Peter Peregrinus in association with the Science Museum, 1989. Pp.xiv + 438. £40.00).

This book covers, in painstaking technical detail, developments in the history of GEC's research activities from the formal decision in the wake of the First World War to establish a research staff, to reorganisations introduced during the early 1980s. The emphasis is on the period before 1980, the account of which is based to a great extent on the technical reports produced within the laboratories. Following two introductory chapters on the philosophy underpinning the laboratories and a brief outline of their scientific highlights, Clayton and Algar divide the mass of material mainly along technical lines, describing in turn the company's changing research programmes in, for example, lamp technology, valves, communications and electronics, semiconductors, glass, and metallurgy.

At first glance the book does not have much to offer business historians: it is very much, and deliberately, the story of Research & Development from a technical point of view, with little contextual information. Nevertheless it illustrates not only the increasingly central role of research within the company, but also the enormous contributions made by GEC (and, by implication, the UK's other large industrial companies) to the development of science and technology in Britain. It should not be overlooked by anyone interested in either the growing relevance of R&D within the firm, or the general history of science-based industry.

London School of Economics MARI WILLIAMS

DANIEL C. KRAMER, *State Capital and Private Enterprise: The Case of the UK National Enterprise Boards* (London and New York: Routledge, 1989. Pp.256. £30.00).

Although the National Enterprise Board was best known for its involvement with British Leyland and Rolls Royce, it is with its activity as a supplier of venture capital to small- and medium-sized firms that this book is most concerned. In general, the verdict on its performance as a lender of venture capital is favourable. The reading of venture capital is wide, including not just 'seedcorn funding', but also the provision of funds to companies such as Ferranti and Fairey which were bought from the receiver and saved from collapse respectively. Frequently, the National Enterprise Board lent most successfully to firms which were already operating within the market, but which were experiencing fund-raising problems. What were not successful were the Board's own efforts to spot gaps in the market and to establish such firms as Nexos and Inmos to fill those gaps. The failure of Inmos in the microchip market and of Nexos as a producer of electronic office equipment indicated that while the Board was capable of spotting high-growth markets, it was not equipped or suited to establishing new firms, often lacking a fully-tested final product, within those markets. The Board was much better suited to assisting firms which were already close to and operating in the market, which had solved many of the basic production problems, and which had some experience and customers. Most preferable of all was that the Ministry of Defence be one of those customers. Kramer regards it as more than coincidental that the NEB 'routs', British Leyland and Alfred Herbert, had few, if any, defence contracts, while the 'victories', Rolls Royce, Fairey and Ferranti, all had 'the military as one of their most important clients'.

Kramer believes that 'the United Kingdom should breathe new life into the National Enterprise Board and that the United States should create one'. His arguments rests on what he sees as the success of the Board as a lender of venture capital and on its potential as a mainspring of new employer–employee working relations within Britain. He makes his general case well, although he admits to being unable to demonstrate counterfactually what the net loss would have been had the Board never existed. Assessments are based on common sense and impressions, rather than calculations. Nonetheless, this is a lively and sympathetic study of the National Enterprise Board which goes some way to filling an outstanding gap in the literature on state intervention in manufacturing industry during the 1970s.

University of Edinburgh MARTIN CHICK

KATHLEEN BURK, *The First Privatisation: The Politicians, the City, and the Denationalisation of Steel* (Long Wittenham: The Historians' Press, 1988. Pp.158. £14.95).

This book is an essay on the theme that is currently engaging the mind of business historians, the interplay between government, financial interests, and industry. When the Conservative Party were returned to power in 1951 with a manifesto commitment to denationalisation, all three were carried into an areas where they had no precedents to guide them. Dr Burk exploits the abundant materials now available in the Public Record Office, at the Bank of England, and in the records of the merchant banks (Morgans and Barings) to trace how they groped their way through this perplexing area.

There were conflicting opinions from the outset. The merchant banks optimistically thought that the iron and steel companies could be resold to the public while the Bank of England (itself transferred to the public sector by the Labour Government) initially believed it was impractical and subsequently responded from duty rather than conviction. The Conservatives lacked a firm united view on what should be done, with the Prime Minister (Churchill) blowing hot and cold and the Cabinet divided. From the Labour front bench, George Strauss, the architect of the industry's nationalisation, waged unceasing war on Tory plans, but Lincoln Evans, the senior T.U.C. figure responsible for iron and steel, adopted a policy of influence from within the machinery of change rather than sabotage from outside. The ultimate irony of Tory planning was that the Iron and Steel Corporation's 298 firms was superseded by an Iron and Steel Board with control over 2,400 firms. That control extended to raw materials, capital investment, prices and research, but had no power of creative leadership.

The sale of the first blocks of shares in the autumn of 1953 was the climax of more than two years' preparation. Morgans persuaded the Prudential and other institutional investors to take 50 per cent of the early issues, but the large sums involved soon showed that this was inadequate and the Stock Exchange price slumped. Such a vast operation required them to purchase and retain much larger blocks of shares and this they were (wisely) unwilling to do. Political propaganda blamed the threat of renationalisation on this flop, but this is not what the Chairman of the Realisation Agency (a cool accountant) believed. It was 1961 before many of the shares were sold, and some companies proved to be unmarketable. The disappointing performance of the nationalised iron and steel industry in this period was attributed to the sluggishness of the public sector but was probably more to do with the fact that the Board's powers were always too limited.

Dr Burk does not enter on the Thatcherite period of privatisation, not even by way of introduction or conclusion. This is a pity because the contrasts with this earlier period of Tory policy are so stark. To mention just one telling detail: the privatisation of Stanton & Staveley in 1985 (a small part of BSC sold early) involved a preparation expenditure of about £75m. (redundancy payments and modernisation) to sell it to a *French nationalised company* (Pont-à-Mousson S.A.) for £25m. No-one ever doubted Thatcher commitment!

University of Nottingham S.D. CHAPMAN

E. COURSE (ed.), *Minutes of the Reading, Guildford & Reigate Railway Company* (Guildford: Surrey Record Society, 1987. Pp.302. £15.00).

This is an unusual volume of records from an unusual railway company. The Reading, Guildford & Reigate obtained its original Act in 1846, and ceased to exist in 1852 when it was absorbed by the South Eastern. Between these dates it was responsible for the construction, though never the operation, of about 40 route-miles of railway through a rural area in Berkshire, Hampshire and Surrey. Before the line was completed, it had been agreed in 1847 to rent it to the South Eastern, which made the eventual amalgamation virtually inevitable. Another interesting and perhaps atypical feature of this small concern was its financial success, which produced results for the shareholders 'far more lucrative than the earnings of the line could justify' (p.liii). Although the board is said to have been 'very able' (p.lii), because of its strong London Stock Exchange connections, the element of good luck in the company's fortunes is also acknowledged. The fact was that both the RGRR's subscribers and the South Eastern's directors overestimated the commercial prospects for the line, which was planned primarily as a through route, avoiding London, between the Midlands/North and the South East. The SER was excessively generous, first with its rent, and then with its purchase price. The economic impact of the RGRR was modest, being largely confined to the residential development of Reigate and Dorking, and some positive contribution to local agriculture and lime-burning. However, Dr Course ends his introduction with a topical prediction that the opening of the Channel Tunnel will finally enable the former RGRR route to 'fulfil all the promise envisaged by its creators' (p.liii).

The small scale and short life of the company has permitted the reproduction of virtually the entire text of the board minutes, which, along with three appendices, form the bulk of the volume. The minutes are informative about the problems of promoting, financing and constructing a small local railway, including the necessary interaction with local interests and with other railway companies. They cannot, for obvious reasons, throw any light on questions of management or operation. This is a well-produced and clearly organised book, with a substantial introduction by Dr Course. It has a good index and a helpful biographical list, with brief backgrounds, of the principal characters in the story. A map and a few photographs, mainly of stations, complete the contents. The editor and the Surrey Record Society have executed their chosen task with impressive thoroughness. It is doubtful whether any other railway company will receive similar treatment.

University of East Anglia G.W. CROMPTON

JAMES M. SKINNER, *France and Panama: The Unknown Years, 1894–1908* (New York: Peter Lang Publishing Inc., 1989. Pp.310. $40.90).

The French made two attempts to build the Panama Canal. The failure of Ferdinand de Lesseps, the hero of Suez, by 1888 was the first and until now better documented. The second attempt, which ended equally ignominiously with the transfer of assets to the Americans in 1904, is the subject of this study. Learning from the original failure, the Compagnie Nouvelle took care to avoid some of the more serious errors of its predecessor, the Compagnie Universelle. In place of the sea level waterway originally proposed, the new company opted for a canal with locks at each end and fed by the Chagres river whose level would be raised by a dam. This could be achieved at a third of the cost and with less risk of subsidence. The death rate was much reduced by diagnosing and treating malaria. Improved surveying was envisaged and the company was given added prestige by the appointment of the renowned figure of Jean Bonnardel as its president. Alas, this was still insufficient to ensure success. The corruption and inefficiency of the first company enabled the new company to find only 6,500 original investors in contrast to the enthusiastic quarter of a million who supported the first project. The second company, therefore, proceeded with financial caution from the outset which backfired when low wages led to industrial unrest among the workforce. Mining activity in Australia, South Africa, Alaska and the Yukon exacerbated the labour shortage as did the fear of death and disease associated with the Compagnie Universelle. Attempts to ship labour in from Africa met with little success.

Skinner, however, chooses not to focus upon economic explanations of the company's failure, opting, instead, for a detailed, even tortuous, account of political intrigue and in-fighting which appears to have plagued the company. On a broader level, he offers further explanation in terms of American imperialist expansion at the end of the nineteenth century, analysing, in particular, the American role in Panamanian independence from Colombia and Roosevelt's reassertion of the Monroe Doctrine of non-interference by European powers. For America, he argues, military and strategic considerations stood above economic factors on the Panama question. Thus, he concludes, there is a good deal more to the story than the traditional interpretation of American enterprise achieving in eight years something far beyond the visions of successive French engineers. American success was never inevitable and was for long hampered by rising costs, conflicts of authority, indecision regarding the type of waterway to build, frequent resignations of chief engineers and the slow arrival of requisitions. For Skinner, therefore, the reason why America and not France built the Panama Canal lies not in economic achievement but rather in the changing political structure of Central America and the power of lobbyists at Washington. Interesting though Skinner's explanation is, he may have pushed the pendulum too much in the other direction by giving insufficient consideration to economic factors before turning to a detailed political explanation of the forces that shaped the building of the Panama Canal and the establishment of Panamanian independence.

University of Auckland SIMON P. VILLE

MINISTÈRE DE L'ÉCONOMIE, DES FINANCES ET DU BUDGET, Histoire économique et financière de la France: Études et documents, Volume I (Paris: Imprimerie Nationale, 1989. Pp. ii + 527. FF200).

In 1986, the French Ministry of Finance established a committee for French economic and social history; it was made up both of academics and of civil servants, but the choice of the former made some eyebrows rise, as several well-known economic historians were not included – obviously for political reasons. This kind of official institution and the government-directed research which it is supposed to conduct are generally considered with suspicion in Britain – a distrust which will be enhanced by the Minister of Finance, Pierre Bérégovoy, having written the preface to the present volume (fortunately, it does not exceed two pages).

The committee has an ambitious programme, to encourage research and publication on the economic and financial history of France, with an emphasis on the role of government and its impact upon the economy. This thick volume is the first product of their exertions and it is planned to publish one similar book every year (several different projects will also result in publications in the near future). I must say that it disarms the suspicions which I mentioned earlier, and it is actually a surprise that a leading role has been played in its preparation by two men who, far from being flunkeys of the present regime, are genuine first-rate scholars – Michel Bruguière and Guy Thuillier, who have won distinction both as public servants and as historians. (Bruguière, sadly, died at the early age of 51 in August 1989.)

The volume is divided into six parts (an arrangement which is intended as permanent). The first – and longest – is made up of 11 articles, all based on primary sources; their range extends from eleventh-century taxation to the negotiations relating to the Marshall Plan (with some suggestive data on the Anglo-French quarrel about the devaluation of the franc in 1948); in-between, one will find, *inter alia*, studies on a war contractor under Louis XIV, on the 'Spanish dollars' affair of 1805 (which uses some documents from the Bank of England and from Baring Bros.), on Léon Say, economist and politician. There is a fair balance between the main periods of French history, but the emphasis is on public finance and the 'civil servants' and financiers who were involved in it.

A second part, *Mémoires et souvenirs*, gives two chapters of the unpublished autobiography of Jacques Georges-Picot, a civil servant, who later became chairman of Suez; in later issues, interviews with former civil servants and politicians will also be featured. The third part, *Chroniques*, is short and leans towards anecdotes. The fourth and fifth, which deal with sources and methodology, have been mostly written by Guy Thuillier and contain many useful remarks, specially his essay on local sources for the monetary history of the French Revolution. Finally, there are 100 pages of 'documents', ranging from a table of the Royal government's expenditure in four years, from 1548 to 1673/74, to the facsimile of a pamphlet which the eminent demographer and economist, Alfred Sauvy, wrote in 1954, to explain to ordinary people the economic policy of P. Mendès-France.

Altogether, this is a serious and useful collection, though one wonders about its cost and the opportuneness of its publication at a time when research in French universities is starved of funds and when old-established and high-quality scholarly journals find it difficult to make both ends meet. It is shocking that 120 special, leather-bound and gilded copies have been printed, obviously for distribution to members of the *Nomenklatura*.

As for business historians, they must not expect too much from this undertaking, with its macroeconomic emphasis and its interest in monetary and financial policies. On the other hand, government, as the largest business in France, always had dealings with large numbers of businessmen and firms; to parody a well-known aphorism, the business of France is government. So the guide for research in the sources of French economic and social history, which the *Comité* is preparing will be valuable to both macro- and micro-economic historians.

University of Paris–Sorbonne FRANÇOIS M. CROUZET

HANS POHL and BERND RUDOLPH (eds.), *German Yearbook on Business History, 1987* (Berlin: Springer, 1988. Pp.viii + 152. DM55.00).

The aim of this volume, as of the earlier ones in the series, is to introduce the work of German business historians to a wider audience by using the medium of the English language. Apart from a comprehensive and impressive account of the work of the German Business History Society in the preceding 10 years, written by Hans Pohl, it contains three articles, reviews, with brief commentaries, of the literature on business history in the widest sense, and of banking history respectively, which appeared in Germany in 1986, and several brief conference reports. Most of these had appeared previously in German.

Possibly of least interest to business historians is the extract from a book by the late Otmar Emminger, former president of the Bundesbank, on the evolution of floating exchange rates in the 1960s and 1970s. It is largely autobiographical and somewhat self-indulgent, but sets the record straight on several details of diplomatic to-ing and fro-ing regarding the gradual emergence of a consensus on the necessity to abandon the postwar regime of fixed exchange rates in favour of snakes, blocks and occasional revaluing of the Deutschmark. Hans-Werner Niemann contributes an essay on German trading with Russia in the Brüning era. The topic of the economic policy of Chancellor Brüning, believed by many to have materially contributed, by his failure to deal with unemployment, to the rise of Hitler to power, is still being extensively debated by German economic historians. The accusation is made in some quarters that by his obsession to getting the Allies to cancel the reparations by proving that Germany could not pay, Brüning allowed the economy to be weakened to a point where the population despaired of the democratic parties and chose the charismatic Führer instead. This article will tend, even if only indirectly, to strengthen that view. It shows that the German government was prepared to run great risks and provide large credits to a rather dubious trading partner in the years 1929–33 not so much for the purpose of providing employment, though the Soviet orders certainly did that, but as a lever in the diplomatic battle over the reparations.

The third major contribution is an account by the *doyen* of German business historians, Wilhelm Treue, of some key aspects of the private lives of the brothers Simon and Abraham Oppenheim, the prominent Cologne bankers, whose influence was at its peak in the third quarter of the nineteenth century. Banking was still a risky business, especially in the revolution year of 1848, but it could also make individuals extremely wealthy, as it did members of the Oppenheim family. The two brothers kept the business firmly in their own hands, though Abraham, who was childless, occasionally longed to retire to a life of enjoyment in Paris. They operated in a tradition in which bankers were expected to take the initiative in the building of railways and later in the formation of industrial companies, while also undertaking delicate diplomatic tasks for German governments. Long verbatim extracts from their correspondence, their wills and other sources give some of the flavour of the life-style of an emancipated German Jewish family.

The conference reports list the topics of papers to conferences on Technical Reconstruction after 1945, on Medium Scale Enterprises, on the Employment Structure in Banking, on the Development of Savings Banks, on Institutions in the Securities Markets, on the Influence of the Motor Car since 1886, the foundation year of Daimler-Benz A.G., and on the Economic Development of the Maas-Rhine region. British readers who are interested in one or other of these topics will find advice as to where to get copies of the actual reports and papers.

Bielefeld University SIDNEY POLLARD

ALFRED C. MIERZEJEWSKI, *The Collapse of the German War Economy, 1944–1945: Allied Air Power and the German National Railway* (Chapel Hill: University of North Carolina Press, 1988. Pp.xx + 285. $39.54).

As its subtitle indicates, this book is a study of the effects of strategic bombing on the German railway system, and thereby the German economy. In particular, Mierzejewski focuses on the transportation of coal, Germany's only abundant natural resource and her preponderant source of energy. By the twentieth century Germany had developed a complex geographical division of labour, which was reliant upon the efficient transport of coal from the Ruhr and Silesia. The German National Railway was responsible for 90 per cent of coal movements, the remainder being by waterways. A sustained air assault on Germany's railway system, especially the key marshalling yards, was delayed by faulty Allied intelligence assessments, but between September 1944 and January 1945 the railway system was gradually brought to a halt. As a result German armaments production in January 1945 was 30 per cent below what it had been six months earlier. Even this level of production was only possible because factories were consuming stocks, and the end of German resistance was in sight even before any large areas of the Reich had been occupied by the Allies.

Mierzejewski's book is thus a significant contribution to the study of economic aspects of war. He has carried out extensive researches in American, British and especially German archives, including German business records. Readers of *Business History* will probably wish that Mierzejewski had had more to say about the manner in which the management of the German National Railway carried out its functions, but he has drawn a graphic picture of how a major business organization reacted to crisis with what was often partially successful short-term improvisation.

Mierzejewski shows that the National Railway entered the crisis with a good administrative system and a conservative mode of traffic management which it was prepared to adapt to emergency conditions. He concludes that the railway performed admirably until it was overwhelmed by impossible odds. Management began to disintegrate not only as chaos developed in the marshalling yards but also as repeated bombing interrupted flows of information, when telephone lines were cut, and as stress induced a general nervousness and, ultimately, a loss of morale. This last stage was not reached until early 1945, however, when it was apparent to any sensible person that the war had been lost.

While the book's main focus is on the effects of strategic bombing and on intelligence assessment, the history of the German National Railway's struggle against Allied bombing in 1944–45 does illustrate the importance of transportation to the operation of a modern industrial economy. Business historians will have an interest in Mierzejewski's account of how the effects of bombing could be mitigated by inventive, flexible management and by the reallocation of priorities by Albert Speer, the Nazi leader most responsible for the working of the German economy in the latter part of the war.

University of Bristol G.C. PEDEN

E.S.A. BLOEMEN, *Scientific Management in Nederland, 1900–1930* (Amsterdam: Nederlandsch Economisch Historisch Archief, 1988. Pp.234. No price).

Starting from the theoretical approaches of Braverman and Nelson, the author examines the early-twentieth-century experience of the Netherlands in the application of scientific management. He discovers that before the First World War, Taylor's ideas had minimal impact except in the introduction of piece rates. Although there was greater division of labour and workers had less discretion in the workplace, this was more a function of mechanisation than any systematic attempt by employers to gain control.

During the war there was much discussion but little implementation, despite the trade unions changing their stance from outright hostility. By the 1920s, they were enthusiastic advocates of some elements. From an examination of the archives of the first Dutch scientific management consultancy, run by Ernst Hijmans and Vincent van Gogh, the author concludes that there was more of Nelson than Braverman in the Dutch experience. There was greater emphasis on technical and organisational improvements than changing the content of the work and although duties were more strictly defined and less flexible there was no evidence of systematic separation of conception and execution. Where it occurred, conception was handed to specialists not managers or bosses. He believes there was no radical break with the past.

These are important findings which add to our understanding of the international impact of scientific management and deserve to be wider known. Unfortunately, since the book is written in Dutch its audience will be rather restricted. There is a three-page summary in English at the end but the work deserves a translator.

Ealing College JOHN ARMSTRONG

STUDI STORICI, *Industria elettrica e movimenti di capitale in Europa* (Rome: Special Issue of *Studi Storici*, Vol. 28, No. 4, 1987. Pp.815–1097. No Price).

The innovations of Edison, Siemens and Ferranti, in the late nineteenth century, led to the simultaneous introduction of electricity in Europe, though the rate of diffusion varied between economies. From the 1890s the leading electromechanical enterprises – General Electric and Westinghouse in the USA, Siemens and AEG in Germany and Brown Boveri in Switzerland – began to expand their activities overseas. This Special Issue of *Studi Storici* includes a number of research-based papers on the electrical industry and capital movements in Europe from 1880 to 1930. A number of these formed part of a research programme directed by Peter Hertner at the European University Institute of Florence.

Hertner, a distinguished scholar of multinationals and foreign investment in historical perspective, provides the first essay which analyses the strategy of foreign investment pursued by the German firms of Siemens and AEG from 1890–1914. Hertner links such multinational activity with the diffusion of high voltage alternate current technology, which allowed the transmission of electricity over long distances. Manufacturers of this heavy electrical equipment had to finance sales by extending credit, by accepting part ownership or by actually building and financing the power station themselves. Their main tool was the Unternehmergeschaft, by which they arranged the financing, construction and then the sale of power stations to private concerns. In his essay Hertner describes how this mechanism operated in the case of Société Suisse d'Industrie électrique established in Basel in 1896 by Siemens & Halske, with German, Austrian and Swiss banks. He compares this with that of Elektrobank, a financial holding established in 1895 by AEG in collaboration with German, Swiss and French banks, to enlarge the market for its products. This theme is continued in the second essay where Luciano Segreto examines the behaviour of Swiss electrical holdings after the first World War, after the Germans had lost control of them.

The other two essays examine the different features of international activity in the electromechanical industry. Pierre Lanthier examines the presence of foreign electromechanical enterprises in France through the analysis of entrepreneurs in their French branches. He identifies two phases. In the first, when enterprises were first established, there was a significant foreign presence. In the later phase, however, there was a significant growth in the number of French entrepreneurs. Lanthier explains this growth of local enterprise by two factors. Firstly it represented a specific strategy by multinationals wishing to give foreign branches greater autonomy, whilst it also reflected the ability of French entrepreneurs to exploit new opportunities.

Antonio Tena Junguito provides a quantitative macroeconomic analysis of the import/export of electromechanical products in Spain before 1935. His main conclusion is that there was a positive link between tariff policy and the rise of a local electromechanical industry, through the process of import substitution.

The last three essays, Alain Beltran on the French–Belgian group Empain in Paris, Giovannia Bruno on Società Meridionale di Elettricità (SME) and Pinella di Gregorio on Società Generale Elettricità della Sicilia (SGES), are business histories of electrical utilities. They analyse the role of foreign shareholders in local electrification programmes. Beltran highlights the defensive strategy adopted by the Empain group to avoid competition from other enterprises, both private and public. Bruno and Di Gregorio, on the other hand, consider the role of local management for foreign shareholders. Both essays underline the importance of local managers in choosing strategies for growth and limiting the role of foreign shareholders seeking to safeguard their investments.

This collection of essays provides a comparative perspective of the diffusion of electricity in Europe from the late nineteenth century. It highlights turning points in technology finance and the strategy of enterprises. It is a pity that there are few estimates of total foreign investment in the electrical industry in Hertner's and Segreto's essays and in those in Italian enterprises. In these cases, stronger attention to the quantitative side of electrification (investments, demand, tariffs and so on) could have given a new dimension to the central role of local management in the choice of strategies.

Università degli Studi di Firenze RENATO GIANNETTI

SEBASTIAN BALFOUR, *Dictatorship, Workers and the City: Labour in Greater Barcelona since 1939* (Oxford: Clarendon Press, 1989. Pp.288. £27.50).

The final years of the Franco dictatorship in Spain witnessed a burgeoning of working-class militancy which erupted into a wave of strikes and other forms of protest in the early 1970s. No other organisation played a more heroic role in the workers' challenge to Francoism than the Communist-dominated Workers' Commissions (*Comisiones Obreras*). Nowhere were the latter more effective than in the Catalan capital of Barcelona and surrounding industrial districts. Yet important as the *Comisiones* were in weakening the stranglehold of the regime on all aspects of working-class life, the coming of democracy after 1975 soon entailed what is commonly referred to as the 'crisis of trade unionism' south of the Pyrenees. In the 1980s, economic recession and mounting unemployment devastated the membership of the newly legalised trade union organisations.

Sebastian Balfour's path-breaking and lucid account traces the experiences of the Catalan and immigrant working-class from the arrival of Franco's victorious forces in the Principality in 1939 down to the present day. His analysis focuses on four differing communities; the old woollen towns of Sabadell and Terrassa, the rapidly expanding engineering and heavy industrial districts of the Baix Llobregat, and Barcelona itself with its more diversified industrial structure. Given the absence of detailed and reliable studies, Balfour interviewed dozens of workers, some of whom strongly influenced the activities of the labour movement, and others who played a more passive role. Their oral testimony enriches the text, as does the illuminating evidence which he unearthed in the archive of Franco's secret police in Catalonia.

After its defeat of the Second Republic in 1939, the uncompromising Franco regime systematically set out to eradicate all vestiges of the pre-civil war labour movement. Balfour chronicles the degradation of working-class life in Greater Barcelona during the 1940s, not least among the cave dwellers of Sabadell. Despite infiltration and collaboration, popular dissent at officially decreed price rises in 1951 gave rise to a mass boycott of the Barcelona trams and a spontaneous General Strike. As economic growth transformed the employment pattern of the region during the 1960s, the harsh conditions of the labour force led to the formation of a variety of clandestine organisations. While the Socialists of the *Unión General de Trabajadores* refused to act within the official state unions to defend the interests of their supporters, the *Comisiones Obreras*, increasingly under the sway of the Communists, chose the tactic of entrism. Balfour charts their successes in defeating official candidates in the union elections of 1966 which provoked a new wave of violent repression, mass arrests and long gaol sentences. Yet, notwithstanding the increasingly brutal approach of the ailing Franco regime, during the early 1970s the use of the strike weapon spread to teachers, hospital staff, bank employers, insurance clerks, building workers and all manner of people who had never stopped work before. The rise of labour dissent saw a parallel upsurge of protest movements in the working-class estates of the large towns, often with women in the forefront. While the employers grew despondent, the authorities sent in the riot police. Often carried away by their own propaganda, the *Comisiones* believed in the imminence of a General Strike which would bring down the moribund Franco regime. However, as Balfour recounts, the demise of the dictator led to a peaceful transformation of political life in Spain in which the Socialists enjoyed a higher profile than their Communist rivals. Even though the Workers' Commissions retained their hegemony within the working class of Catalonia, labour saw fit to subordinate its demands as part of a political compromise to consolidate the country's fledgling democracy. Later the economic crisis cut a swathe in the unions' membership figures making them even less effective in the defence of their members' interests.

Balfour's splendid account vividly portrays the ups and downs of working-class life and activity in Greater Barcelona during the last half century. It deserves to be widely read.

University of Manchester JOSEPH HARRISON

ARCADIUS KAHAN, *Russian Economic History: The Nineteenth Century* (ed. by Roger Weiss) (Chicago: University of Chicago Press, 1989. Pp. xii + 244. £37.95 cloth, £15.25 paper).

This volume contains articles and chapters written by Arcadius Kahan before his untimely death in 1982. They can be seen as representing part of the foundation for a comprehensive study of the Russian economy in the nineteenth century on which Kahan would have embarked had he lived.

The range of contents is wide in both scope and length. The longest chapter comprises nearly half the volume and is a survey of the Russian economy between 1860 and 1913; it concludes with a short separate treatment of Congress Poland. It was first published in 1980 in a German textbook on East and South East Europe. The nine shorter chapters which follow include two previously unpublished papers and range over agriculture, government policy towards industrialisation, education and the development of an industrial labour force. The volume concludes with a survey of the statistical sources available to the economic historian working on the period. Most of the material was first published over 20 years ago and, consequently, to a varying extent it has been overtaken by more recent scholarship.

It is for the overall study of the years between the emancipation of the serfs and the First World War that this volume is valuable. Although it first appeared before the publication of Paul Gregory's work on Russian national income, it still provides a short, but useful and relatively comprehensive, introduction to the economic development of Tsarist Russia during these years. As is shown by his 1967 article on government policy which is also republished here, Kahan was critical of those writers such as Alexander Gerschenkron who placed the state at the centre of Russian industrialisation. For Kahan, the concentration on the state as the driving force in the growth process underplayed both the negative effects of some government policies and the role of market forces. Not surprisingly such a view underlies this survey. Kahan concludes that 'the Russian government cannot be considered the prime mover in the industrialisation effort' (p.68).

It is one of the legacies of Kahan's contribution to the study of Russian economic history that a more balanced view of the forces behind the industrialisation of Tsarist Russia has now gained wide acceptance. It is, for example, a theme of Gatrell's recent textbook. We can only feel great regret that Kahan himself was not able to complete a full study of this period.

University of Exeter ROBERT LEWIS

D. ELEANOR WESTNEY, *Imitation and Innovation: The Transfer of Western Organizational Patterns to Meiji Japan* (Cambridge, MA and London: Harvard University Press, 1987. Pp.252. £19.95).

In the recent literature in Japanese economic and social history, the assessment of the transfer of Western organisational structures to Japan in the Meiji period (1868–1912) has become less clear-cut. Revisionist scholars have argued for the importance of the heritage accumulated in the Tokugawa period (1603–1868) in accounting for the rapid industrialisation which followed. The Tokugawa period saw the development of a highly centralised bureaucracy and sophisticated commercial and credit networks, which transferred new organisational patterns from one region to another and co-ordinated them nationally. Although many Meiji organisations were intended to emulate Western models, the existing infrastructure was responsible for their rapid diffusion, as well as for the ways in which the original 'models' were modified. The managerial capacity of the peasant household, the political and administrative skills of the village community, the paternalistic managerial structure of merchant houses and the samurai bureaucracy, both at the local and the national level, all played a part in this process. Thus the boundary between imitation and innovation now seems as blurred as ever.

Westney's book attempts to explain the process by which Western organisations were studied, selected and developed in Meiji Japan, and to discuss how their diffusion took place. Behind these questions lies the current issue as to whether Japanese organisational structures can be transferred to the West and, if so, how. But her focus, both theoretical and empirical, is much more specific than her title implies. She deals neither with economic nor business history in any depth, nor does she seriously examine the indigenous sources of Meiji organisations; rather she concentrates on applying a specific sociological framework to the history of three organisations of relatively minor importance; the police, the postal system and newspapers. As a result, some aspects of the transfer are sharply highlighted with interesting theoretical implications. But the task of locating them in their historical context is largely left to the reader. Important literature relevant to this theme, both in English and in Japanese, are ignored (or are not considered as 'systematic' enough: see p.228). It is a stimulating but very demanding book to read.

The three case studies reveal some of the diversity and complexity of the transfer process. The establishment of a police system was regarded by the early Meiji government as an essential part of building up the modern state. The model chosen was the French police system, the largest, the oldest and the most highly centralised in Europe. At the same time the Japanese structure exhibited a number of deviations from the model; it lacked locally controlled police; the influences of the samurai bureaucracy and of the army contributed to further standardisation and centralisation, through the successful adaptation of the formal facilities for intra-organisational training, a rational structure of bureaux and organisational sections, and a sense of loyalty. The model for the Japanese postal system was British: here departures from the original model came partly from Japan's relative backwardness; it lacked a railway network and a sizable market. The rapid diffusion of the system was, however, also the result of the recruitment of local notables, such as village headmen, and the formal training of administrators. Unlike the police and the postal service, the development of Japanese newspapers was neither initiated by the government nor based predominantly on a single model. The industry started with small scale private enterprises, but quickly grew into a sector with several competing large enterprises. The complex ways in which the traditional format and technology of newspaper production and indigenous commercial skills (particularly well developed in Osaka) absorbed Western models are difficult to trace within the framework of this book. Yet, if one looks at the entire Meiji Era, the case of newspapers may well have been more representative of the overall pattern of organisational transfer than that of the police and the postal system.

Westney has concentrated on 'how culture and new organisational patterns interact[ed]' (p.25). This means that the questions as to how that 'culture' continued to develop indigenous organisations during the Meiji period, and how indigenous organisational patterns in turn interacted with Western models have been left largely outside the scope of this book. In order to understand 'how the process of cross-societal emulation shape[d] the development of organisations (ibid.), we need to study these questions in their full historical perspective.

School of Oriental and African Studies, London K. SUGIHARA

HAMEEDA HOSSAIN, *The Company Weavers of Bengal: The East India Company and the Organization of Textile Production in Bengal, 1750–1813* (Delhi: Oxford University Press, 1988. Pp.xvii + 211. £13.50).

The weavers of Bengal have long been at the centre of controversy about the state of the Indian economy in the late eighteenth and early nineteenth centuries and of the impact of the English East India Co. as it moved from being a commercial enterprise to the major land power in South Asia. But for all the controversy surrounding the weavers and the enormous importance of their products to the finances of the eighteenth-century companies, and despite, too, the rapidly growing interest in the interaction between the European trading companies and the Indian economy, little detailed research has yet been done to explain the reasons behind the stagnation and decline of the export-oriented cotton weaving industry by the early nineteenth century. Hameeda Hossain's monograph is a timely and important contribution to this debate. Although it does not explore the more general issues of trade and incipient empire at any length, it makes good use of the detailed East India Co. records in London (including recently discovered documents from the Dhaka Factory) to investigate the conditions of the weavers, the nature of their production methods, their market situation and the constraints imposed upon them by the English Company in its search for reliability and profitability.

Bengal's weaving industry, it is argued, was clearly in decline by 1813, the year in which the Charter Act legalised private trade and restricted the Company's commercial role. Broader political and economic factors, such as the Maratha incursions or the devastating famine of 1770, may have helped to destabilise conditions for the weavers, Hossain suggests, but greater importance attaches to micro-level constraints, especially the intrinsic weakness of the supply organisation itself. The weavers formed part of a largely traditional system of small-scale production which, though capable of some technical innovation and a high degree of craft specialisation, was unable to meet the novel demands made of it by the English Company. The centralised system of accounting and ordering cloth developed by the Company called for a planned budget, fixed prices and a tight production schedule – requirements that were beyond the capacity of such dispersed and small-time producers. Brushing aside its European rivals, the Company was able to establish a direct hold over the weavers, creating and enforcing new legal obligations that they were largely powerless to resist except by withdrawing from their trade entirely. Thus, it was not the Industrial Revolution in Britain, often blamed for the weavers' demise, that was responsible for undermining production in India: the evidence rather suggests an inability to meet demand due to a crisis in production brought about by the Company itself. The system thus collapsed as a result of its own structural weaknesses exacerbated by unprecedented external pressures.

This may not be the easiest of books to digest at a first reading and those unfamiliar with Bengal and with the technical and vernacular terms with which the book is liberally spiced will need to turn to the maps, appendices and glossary for frequent elucidation. At times one wishes that Hossain had stood further back from the immediate and often very detailed discussion of the weavers to consider the wider ramifications of the weavers' plight. Nonetheless, the central hypothesis is persuasively argued and amply supported by detailed evidence from the *arangs*, the rural areas where cloth for export was produced and sold. This is a work of painstaking historical scholarship and a significant contribution to an important and rapidly growing field.

School of Oriental and African Studies, London DAVID ARNOLD

GEORGE DAVID SMITH, *From Monopoly To Competition: The Transformation of Alcoa, 1888–1986* (Cambridge: Cambridge University Press, 1988. Pp. xxxiv + 554. £30.00).

From Monopoly To Competition offers a fascinating approach to modern business history. Since Alfred D. Chandler Jr. developed his model of corporate and industrial behaviour there has been a crying need for many in-depth company studies to test general propositions, particularly for the growth industries of the twentieth century. But such volumes require not only a lengthy period of research and writing, they demand the co-operation of the firm concerned and a solid body of primary sources. George David Smith, President of the Winthrop Group Inc. and a Professor in Business Administration, was originally hired by Alcoa to do a proprietary study of the company's corporate culture and ended up by writing a formal history. Through his initial work he demonstrated the importance of history as 'both a source of strength and as a constraint on the corporation's ability to adapt to changing circumstances' (p. xxvi) and as Alcoa was about to celebrate an industry centennial in 1986 and a corporate centennial in 1988, the management took the opportunity to support a volume which would 'serve as a bedrock of knowledge for managers and employees on Alcoa's evolution' (p. xxvi). The corporation would be educated by knowing the complete story of its development. Other outside audiences like government officials, academics, students, customers and even rivals could and would benefit from the volume, but they were not the primary targets. This then is history for the 'insider', but as modern business executives and middle management are highly trained and educated, as the advisory committee reading the book manuscript included academics and as a major University Press was publishing the work, there is a sound grasp of scholarship and careful analysis as well as a narrative of technological and administrative change.

The volume moves through a century of growth and change in chronological stages. Within these stages Smith explores several themes – corporate strategy and structure, technological innovations, labour relations, regulation and relations with the government and international developments – and he attempts to pull these themes together with chapter overviews or summaries of the corporation at a specific date. The overall thrust is positive, at times almost glowing in its sense of destiny and mission, and difficulties are presented as problems to be overcome by entrepreneurial initiatives. So what happened? Capitalising on an invention which offered low-cost production of a potentially useful metal and protected by patents, Alcoa grew by acquisitions, by reinvesting profits and by economies of scale. It further supported its horizontal expansion through vertical integration and achieved a virtual monopoly position in the early twentieth century. Retaining a family and paternalistic style approach to management and labour relations, the corporation adopted a functionally departmentalised structure in the interwar years and developed formal R&D programmes. Running into conflict with US anti-trust laws, Alcoa was eventually pushed into an oligopolistic market structure at the end of the Second World War, but it kept its edge in the industry. During the 1950s and 1960s new civilian and defence needs encouraged a high rate of growth, but more recently competition from other aluminium producers in the world and from new materials, together with slow growth rates in the American economy and escalating production costs, pointed to long-term weaknesses. A revolution in industrial strategy in terms of diversification into high-technology non-aluminium materials and in administrative structure in terms of a full development of a decentralised business unit is the current solution to overcoming changes in Alcoa's environment.

Business historians will welcome the vast array of information available in this study. Smith has made effective use of correspondence, minutes, annual reports, legal briefs, interviews and trade publications. Previously restricted to the partial and limited insights of Charles C. Carr's *Alcoa: An American Enterprise* (1952), academics can now benefit from a fuller and more sophisticated interpretation, and one covering the years after the Second World War. They may, however, be disappointed with certain aspects of the book. At times, especially in the biographies of company personnel, narrative takes too much precedence over analysis. The executive-manager or 'from the top down' approach which the author uses throughout is inappropriate to a treatment of labour relations. Workers are more than a problematic part of production costs. Greater attention to government relations and regulation for the most recent period would also be welcome, though perhaps here the corporation lawyers intervened. These weaknesses notwithstanding this is an essential volume for anyone interested in twentieth-century economic or business history.

University of Birmingham MARGARET WALSH

MARTIN FELDSTEIN (ed.), *The United States in the World Economy* (Chicago and London: University of Chicago Press, 1988. Pp.x + 693. £59.95).

This book is the product of a National Bureau of Economic Research conference held in March 1987 on the theme of the United States in the World Economy. As such it reflects the problems of the day, which are still current, rather than a longer-term perspective. Consequently, it is very much concerned with such issues as the US Budget Deficit and its financing, the world debt problem, and the international competitiveness of the US economy, rather than an attempt to produce a balanced view on the role, nature and importance of the United States' participation in the world economy, either for the United States or the rest of the world. Nevertheless, the individual chapters do make an important contribution to any understanding of international trade and investment over the last 25 years, particularly from an American perspective.

The book is arranged in the form of a brief introduction by Martin Feldstein, then nine substantial chapters, all by different authors on specific themes. Each of these chapters is then followed by comments from at least two people, and a report of the ensuing discussion. This format produces interesting results. The chapters are written by American academic economists and are all thorough, careful, considered, well written pieces, applying economic analysis to largely statistical data and trying to make it all intelligible to the non-specialist. In contrast the comments are by, largely, American businessmen – industrialists & bankers – and American politicians, with a few foreigners thrown in – an Italian, Korean, Mexican & Japanese. Their comments are, in the main, much more impressionistic and opinionated, indicating their immediate concerns in the day-to-day turmoil of decision-making, while the academics are much more reflective and long-term, seeing it rather as an abstract problem to be solved. As a result one of the commentators Peter Peterson – who was both a businessman and politician – put the point, with a hint of exasperation, that 'we can spend days looking at numbers and agreeing on the seriousness of the problem, but until we put equivalent time into changing the politics of the country, we are going to be sitting here having conferences for years'. One wonders how many other businessmen and politicians have the same thoughts about academic scribbling and discussion.

The academic chapters fall into three sections. Two are concerned with the United States's trading relationships and one with finance. In terms of trade there are two chapters on US trade with specific areas over the last 20 years, namely Latin America (Edwards) and the Pacific Rim (excluding Japan) (Baldwin). These provide useful accounts and try to address the question of whether the United States' diminishing competitiveness was due to changes within these regions. For this purpose, it is a pity that there was no specific chapter on Japan (or even Western Europe) as these would have provided a most useful addition, and gone far to provide a more comprehensive picture of US trade. However, some remedy is made in the three chapters which concentrate on specific components of US trade. Eichengreen looks at the products of the basic industries – automobiles, steel & textiles – Gardner looks at agricultural produce, while McCulloch tackles the field of services. Again, each of these is an admirable review of the topic, searching as they are for explanations either from conditions internal to the industry and the United States itself or from external circumstances, such as economic changes and government policies abroad. As with the geographical chapters what is missing is a general overview of the changing composition of US trade to put these individual chapters in context.

Finally, there are four chapters – almost half the book – which are devoted to the financial aspects of the United States in the world economy. Two of these provide a useful survey of the United States' changing position with regard to international flows. Lipsey looks at direct investment in and by the United States from the nineteenth century, in a lucid and analytical account, supported by a 25-page statistical appendix. Frankel investigates capital flows, especially the switch of the United States from the world's major creditor after 1945 to a major debtor in the 1980s. Together, these chapters do provide a comprehensive view of the changing capital position of the United States in the world economy. Unfortunately, the other two chapters, good as they are, do not fit into the overall scheme of the book quite so well. Dornbusch surveys LDC debts and suggests various solutions to the international debt crisis, while Levich provides a very interesting account of the development of global financial markets and their causes and consequences. Though each is useful, and does add to the discussion, neither comes across as of central importance to the place of the United States in the world economy.

Overall, this book should appeal to three potential kinds of readers. Firstly, it provides excellent additional and up-to-date reading for anyone interested in the United States in the world economy, but only for someone who is already familiar with the general picture. Secondly, it is a useful investigation from the American pespective of particular aspects of the functioning of the world economy since 1945, again for someone who is well acquainted with that topic. Thirdly, the separate chapters in their own right provide well written and comprehensive accounts of the topics that they have written about and are to be recommended for anyone with an interest in them. Altogether, the individual chapters are of a uniformly high standard and the whole is of value to quite a wide range of potential readers.

University of Durham R.C. MICHIE

JANE MARCEAU, *A Family Business? The Making of an International Business Élite* (Cambridge: Cambridge University Press and Paris: Éditions de la Maison des Sciences de l'Homme, 1989. £27.50).

Detailed sociological studies of business élites are surprisingly uncommon for any chronological period, the contemporary era being no exception. The lack of salient empirical evidence on such matters as the social origins, education, marriage patterns, social commonalities, and career pathways of contemporary business leaders has not, however, prevented a recent literature of social class and class relations from appearing, a literature indeed as large as the empirical evidence on which it rests is meagre, and largely structured on the familiar lines of Marx *vs.* Weber. A work such as *A Family Business?* is therefore much to be welcomed, for it has been produced by a scholar who is equally at home in sociological theory and empirical research.

Jane Marceau, who is Professor of Public Policy at the Australian National University and was previously Eleanor Rathbone Professor of Sociology at Liverpool University, here reports in detail on the findings of two studies, carried out between 1973 and 1980, on the background, education, and careers of students and alumni of the Institut Européen d'Administration des Affairs (INSEAD) at Fontainbleau, an élite international business school whose students came from twelve national backgrounds. A total of 2,110 students and alumni were polled, as well as 134 wives of French alumni. The result is an interesting and extremely sophisticated survey of a part of the contemporary business élite in Western Europe, which will offer much food for thought to the business historian as well as to the sociologist concerned with social structure.

There seems little doubt that Professor Marceau's study indicates a consistent degree of intergenerational occupational recruitment in the contemporary European business élite which has not widened in any real sense: grossly disproportionate percentages of INSEAD students and alumni were drawn from the sons of wealthy businessmen and, occasionally, professionals, with only a tiny minority rising from below the upper middle class. Indeed, the author finds a resurgence of dynastic business families, often intermarrying, and regularly drawn from the progeny of managers and business owners, as perhaps the most important outcome of this study, demonstrating both the continuingly closed and self-recruiting nature of the European business élite in the late twentieth century, and the utility of the business dynasty both as an entrepreneurial concept and as a sociological unit which has, evidently, successfully responded to the changes in business structure in our time. The transnational nature of the European business élite studied here is also strikingly evident, with this INSEAD sample consisting *inter alia* of 331 students and alumni from Britain, 342 from Germany, and over 100 each from Belgium, Switzerland, and the Scandinavian countries to set beside the 627 Frenchmen. British business students are, increasingly, very much like their European counterparts, although they are much more likely to be the sons of the non-business upper middle class (civil servants, lecturers, the military) than the Europeans – a welcome sign, presumably – and much less likely to have taken a first degree in a scientific subject but more likely to have done an arts degree than the others. This would tend to add weight to the other evidence that exists as to the increasing attractiveness of a business career for the British upper middle classes, whose career pathways for so long led largely to government and imperial service, no doubt for obvious economic reasons. The evidence here predates Mrs Thatcher and also could be taken to show that the values represented by the Thatcher revolution were already in the ascendancy, in salient ways, when she was first elected.

There are some points on which one wished for more complete information. In particular, although we learn that INSEAD was the first graduate business school on the American model founded in Europe when it opened in 1959, there is much about its place in the context of contemporary European capitalism which is not made clear. How, for instance, does it rank *vis-à-vis* its rivals and competitors and how is it perceived by Europe's corporate giants? Although Professor Marceau goes to great lengths to ascertain the true social origins of the group in her study – including, most cleverly, the number of guests at their weddings (over 1,000 in many cases!) – there remains some danger of the circularity so familiar in analyses of the British élite structure, wherein education at a public school and university is taken as evidence of family wealth, and family wealth demonstrated by the fact that the son was educated at a public school and university, without actual direct evidence as to social origins. Some, and possibly many of the respondents here, were almost certainly drawn from the capital-less realms of middle management and the salaried profession; this seems (p.36) especially likely in the British case. Nevertheless, *A Family Business?* is an important and searching work, whose conclusions will remain of key importance long after 1992.

Deakin University W.D. RUBINSTEIN

ALICE TEICHOVA, MAURICE LÉVY-LEBOYER and HELGA NUSSBAUM (eds.), *Historical Studies in International Corporate Business* (Cambridge: Cambridge University Press, 1989. Pp.vii + 252).

Research on the history of multinational enterprises has proliferated, especially in the last two decades. Studies began on the history of US multinationals in the 1950s and 1960s and have subsequently drawn in added economic historians on a world-wide basis. This volume contains essays prepared for the International Economic History Congress in Berne, Switzerland, in August 1986. The book is a sequel to the same editors' successful *Multinational Enterprise in Historical Perspective*; it is introduced with articles by Barry Supple and Edith Penrose and concludes with a stimulating essay by Charles Kindleberger. In between are 16 short papers, ranging from the sweeping (world economic history from 1600 to the present in a dozen pages) to the specific (five years in the life of a single company in one nation).

The collection is global in content, although its sectoral treatment is far from comprehensive. T.A.B. Corley, building on John Dunning's work, provides figures on foreign direct investment worldwide, in 1914 and 1938. His study, however, is on the international activities of particular consumer goods industries (and is a most useful discussion). If Corley's figures are correct, a sizeable proportion of the pre-World War II foreign direct investments were in production of primary products. Yet, with the exception of two papers (Joseph Brandes' and Stephen Randall's) and the Japanese papers on trading companies (which deal with trade in and not investment in primary production), the stakes of multinationals in primary product output are entirely ignored in this collection. Moreover, Brandes' worthy contribution is more concerned with Herbert Hoover's policies on commodity *trade* than with the activities of multinationals in foreign investment, while Randall deals with US oil policies in Latin America (1919 to about 1945) in the framework of an associational state (a state that shared common assumptions with the private sector).

There are papers on Swedish multinationals (one by Klaus Wohlert) and on British and French enterprises (R.P.T. Davenport-Hines advances our knowledge of Vickers' and Schneider's behaviour in the decade 1916–1926). Emma Harris's article on J. & P. Coats in Poland after World War I, based on Coats' records found in Polish archives, is a gem. Three contributions are on Japanese multinationals: Tetsuya Kuwahara presents his research findings on Japanese cotton spinning companies in China in the interwar years; Hiroaki Yamazaki adds new information on the importance of Mitsui Bussan in the 1920s; while Nobuo Kawabe helps us to understand the role of Mitsui and Mitsubishi by looking at their operations on the West Coast of the United States from World War I to July 1941.

Other essays turn to host country responses to foreign direct investments. Phil Shepherd, an authority on multinationals in the cigarette industry, provides new evidence and interpretations on the penetration of Latin American markets in the 1960s and 1970s by US cigarette makers. The outline of the complicated study of multinationals in the French electrical industry in Pierre Lanthier's essay is coherent and encourages the reader to consult his doctoral dissertation on which his paper is based. I particularly liked Gerald Feldman's contribution on the reactions to foreign capital in Germany during the Weimar period; it is truly excellent, a model essay.

There is much more. What the collection shows is the richness and variety of research that is being done on the history of multinationals. My congratulations go to the editors of this volume. Students of the history of multinationals still have much to unravel and to explain (Kindleberger's essay poses a few of the many matters that need to be pursued); nonetheless, articles such as those contained herein help move the process forward. This is indeed a stimulating book in a field that is coming of age.

Florida International University, Miami MIRA WILKINS

GIANNI TONIOLO (ed.), *Central Banks' Independence in Historical Perspective* (Berlin and New York: Walter de Gruyter, 1988. Pp. 198 + xiv. DM132).

What is meant by central bank autonomy? Is it to be defined narrowly in terms of a central bank's freedom to ensure the stability of the value of the currency without fear from undue political influence? Or is the central bank to be viewed as an integral part of the state decision-making machinery, with judgement as to its autonomy relying on assessments of its ability to proffer independent advice and on its freedom of manoeuvre in choosing the monetary means by which to attain broader economic aims already determined by politicians (such as to promote industrial development; to ensure exchange rate stability; or to achieve full-employment through fiscal policy)? This stimulating collection of essays which surveys the experience of central banking in Italy, Germany, France, the UK and the USA through the nineteenth and twentieth centuries, argues strongly for a broad approach. International comparison highlights the diversity of historical development and it is to be hoped that it may eventually contribute to the objectives of the late Fausto Vicarelli (expressed in Chapter 1) of refining theoretical approaches to central banking. However, there is no attempt to do so in this volume.

Each of the essays provides an informed survey of the development of central banking within a particular country. Richard Sylla's essay on the Federal Reserve reflects American concern with formal checks and balances on the power of state agencies. He highlights the periods of overt conflict between central bank autonomy and the broader economic aims of the hegemonic state (such as in the 1930s and during the world wars). He concludes that the degree of independence exercised by the Fed has depended on both the economic pressures of a particular period and the personalities of the main players in the Federal Reserve, Treasury and Presidency. Alec Cairncross also emphasises the importance of the personality of the Governor of the Bank of England to the prestige and autonomy of the central bank in the UK. Throughout its history, though, the Bank has generally been 'one of the team' with a strong empathy with the general economic philosophy of the policy-makers at the Treasury and Downing Street. There have been disagreements, of course, but the Bank has rarely aired these in public and in the last resort – according to Cairncross – has rightly had to accept the views of any forceful Prime Minister. Carl-Ludwig Holtfrerich shows that in Germany the relationship between the central bank and the state has frequently been an unequal one, especially during the Great Inflation of the early 1920s, under Hitler and Göring in the 1930s and, again, immediately after World War II when the Allies largely determined policy. As Giangiacomo Nardozzi shows, in Italy the central bank's role has often been integral to both the formulation and implementation of national economic strategy. Here it has been more acceptable to endow the central bank with much wider functions than in countries such as the USA and the UK, in particular to harbour expectations of central bank involvement in the promotion of industrial development. This 'European tradition', according to the late Jean Bouvier, has also been strong in France and no more so than under the *dirigiste* regimes of the postwar period.

In sum, all contributors show that – to varying degrees – their respective central banks provided an independent input into policy making on occasions, but all accept that an important lesson of history is that when the representatives of the state – whether a dictatorship, autocracy or democracy – insist, central banks concur.

University of Leeds MICHAEL COLLINS

ANTOIN E. MURPHY, *Richard Cantillon: Entrepreneur and Economist* (Oxford: Clarendon Press, first published 1986. p/b 1988. £12.50).

This is a fascinating piece of historical detective work. Antoin Murphy has explored archives in England, Wales, Ireland, France, Holland and the United States to unravel the complexities of the remarkable business career of Richard Cantillon, the author of *Essai Sur La Nature De Commerce En Général*, published posthumously in 1755. He has unravelled the three Richard Cantillons operating in Paris at the beginning of the eighteenth century and shown how the subject of this study rose to prominence in Jacobite financial circles towards the end of the War of the Spanish Succession, gaining the patronage of James Brydges, Duke of Chandos, at that time Paymaster General in Britain. Richard Cantillon declined the offer of employment by Brydges and instead took over the bank of his uncle, Chevallier Richard Cantillon, which was in disarray. His skill in book-keeping, learned under the tutelage of Brydges, allowed him to sort out his uncle's affairs and reach a composition with his creditors. Richard Cantillon then steered a brilliant course through John Law's attempt to manage and revitalise the debt-ridden French economy through the Mississippi System. He was a confident and agent of Law; but resisted all his inducements to accept office in the French government. Having got out of the Mississippi System with an handsome profit long before the speculative boom, Cantillon gained similar riches in the South Sea Boom in Exchange Alley in London and in the Amsterdam market, often made as a result of exchange operations. An experienced commodity trader, he foresaw far better than most of his contemporaries the consequences of the remarkable increases in stock values, which bore no relation to underlying asset values or commodity prices. However, despite the good advice he gave his banking clients, he was happy to lend large sums to those who were reckless enough to continue speculating, particularly Joseph Gage, Lady Mary Herbert, and latterly his erstwhile patron, the Duke of Chandos. After the stock market crash in 1721 until his death in 1734, Richard Cantillon was involved in complex and labyrinthian legal proceedings in France and London to recover his debts, notably with Joseph Gage and Lady Mary Herbert and her family. He was twice imprisoned and in a bizarre plot accused of having ruffians commit murder. Antoin Murphy shows how these experiences coloured Cantillon's critique of Law's system as outlined in the *Essai*, which he reckons was written between 1728 and 1730. After such a tale he scarcely needs to explain why Cantillon assigned such a central role in the economy to the entrepreneur and his principal function of determining price levels. Unlike most biographies, the book does not end with a touching death bed scene, but with a remarkable fire in Albemarle Street in London on the night of 14 May 1734. Antoin Murphy explores the forensic evidence and suggests that Cantillon faked his death to escape from the pernicious legal proceedings of those who owed him money.

Unfortunately, Murphy's excellent research is marred by an infelicitous style which often spoils his tale. What should be an enthralling read often becomes pedestrian and repetitive. This is indicative of the demise of the academic editor in the major scholarly publishing houses, who used to cajole and bully their authors into lifting their texts to a high standard, ironing out imperfections in style and treatment. It is immensely difficult for historians, however exceptional, to master material patiently gathered without such good advice. There is always the ever present danger of including every detail that has been uncovered often at considerable expense in time and money. For the business historian, the book is an object lession in how much can be discovered about the activities of an entrepreneur who prided himself on being '*inconnu*' in the financial capitals of early eighteenth century Europe. Anyone who is interested in the mercantile, monetary and financial history of the period, should read this study which corrects many of the simplistic notions that enjoy academic currency.

University of Glasgow MICHAEL S. MOSS

ALON KADISH, *Historians, Economists, and Economic History* (London: Routledge, 1989. Pp.xii + 297. £35).

The author makes his intentions clear in the first lines of his introduction: 'This book is an attempt to construct a blow-by-blow account of the emergence of economic history as an academic discipline in England' (p.ix). The noise of academic conflict reverberates accordingly. From Oxford come the voices of Stubbs and Freeman, Bonamy Price, Arnold Toynbee, Ashley and, relentlessly booming, that of Thorold Rogers. Familiar topics are rehearsed: the place and teaching of political economy and economic history in Greats and in Modern History; or the relationship between professors and college tutors. Despite some degree of integration between political economy and history, and despite the later influence flowing from Toynbee and Ashley, in Oxford itself the outcome, at least in the short run, seems to have been rather unsatisfactory. Neither Bonamy Price nor Thorold Rogers left any significant mark as holders of the Drummond Chair; the eccentric Edgeworth, in spite of his brilliance as a theorist, did nothing there to advance the cause of either economics or economic history; Ashley's impact was felt mainly in Birmingham; and Toynbee's considerable legacy consisted very largely of the recruitment of industrial history to the cause of social reform. From Cambridge another set of voices contribute to the blow-by-blow account: Seeley and Sidgwick, Foxwell and J.N. Keynes, as well as, famously dominating the course of combat, Cunningham and Marshall. Partly because of the greater power enjoyed by professors in Cambridge and partly because of the genius and tenacity of Marshall, economics secured liberation in the shape of the Economics Tripos, first sat in 1905. Sidgwick, Cunningham and the old Moral Sciences Tripos were defeated; and Clapham emerged, not from economics but from the History Tripos – though with Marshall's blessing – as a 'fully-fledged economic historian' (p.223) at the turn of the century. And there in effect the book ends. The L.S.E. and Manchester get a few mentions; and something is said of Ashley's efforts at Birmingham to give an empirical slant to economics and to present economics and economic history as valuable tools in the training of businessmen – a topic of particular interest to business historians in the light of the current equivocal relationship between business history and business schools.

The book adds much detail to what is already in print. Kadish's own two previous books (*Oxford Economists of the later Nineteenth Century* (1982) and *Apostle Arnold: the Life and Death of Arnold Toynbee* (1986)), J. Maloney's *Marshall, Orthodoxy and the Professionalization of Economics* (1985), G.M. Koot's *English Historical Economics* (1987) and the contributions of Harte, Coats and others have already covered much of the ground though admittedly without revealing the complex institutional in-fighting. Having made very thorough use of such sources as the *Oxford University Gazette* and its counterpart the *Cambridge University Reporter*, the *Oxford Magazine* and the *Cambridge Review* as well as many surviving papers of the contestants, Kadish has certainly been able to refine a story familiar in outline. His blow-by-blow account follows directly from his finding it 'inexplicable' that academics should seemingly ignore 'individual and institutional developments' (p.ix) in favour of the pursuit of divergent or coalescing streams of ideas. The result, for some older readers at least, can hardly fail to evoke memories of hours spent in committees on such fascinating topics as balancing, say, a compulsory paper on elementary statistics in Part I against the glamour of optional Russian economic history in Part II.

Pembroke College, Cambridge D.C. COLEMAN

D.C.M. PLATT, *Mickey Mouse Numbers in World History: The Short View* (London: Macmillan Press, 1989. Pp.91. £25.00.

The explicit aim of *Mickey Mouse Numbers* is twofold: to demonstrate the fragility of the data sources we have to work with and, secondly, to build up an historiographical survey of the use of these 'flawed numbers' from the Victorians to present day econometricians. Thus Part I of the book claims to explain and assess the problems in the compilation of data from the 'first generation' of Porter, McCulloch and Macgregor to the United Nations, whilst

Part II, 'The Reapers', is supposed to demonstrate the misuse of these varied sources by subsequent generations of economists, demographers and economic historians. The insinuation is that the 'misuse' has led to distorted if not incorrect interpretations of the historical past. Had Platt kept to his stated aim, the book would have been interesting and useful. As it is, the explicit aim is undermined and engulfed in the implicit aim of using the book as a polemic for Platt's personal antipathies.

In the introduction to *Mickey Mouse Numbers*, Platt states that his aim is to underline the fact that poor data are 'bad' and that they can lead to unreliable conclusions. No economic historian would find that proposition startling. The discipline is hardly going to be shaken to its foundations by that so-called revelation. The problem is that we are not offered a reasoned analysis of the inherent flaws of the data, how they might be corrected and improved or what alternative sources might be employed. The implication is that numbers are 'bad' so we might all just as well pack up our bags and go home. The informed comments of the Fogel/Elton debate are thus totally absent from this book. At the outset Platt states that numbers can be useful if directed by reason and scholarship; the problem is that in his data resumé he fails to show how his 'bad numbers' could be so improved.

The historiographical survey of the 'reapers' is even more disturbing. At no point does Platt suggest how our interpretation of the past might be altered by different and/or corrected data. The proposition that the work of Bairoch, Kuznets, Lewis and Maddison (to name but four of his 'hit list') might contain some flaws due to data source problems is one with which the cited authors would not only agree but which they are all at pains to point out in their work. As such, Platt insults academic integrity. Is he really implying that all the works of all the 'hit list' are completely invalidated? If so, we need some proof. At no point does Platt show how and why this eminent body of research might be amended if alternative sources and/or corrected data were employed. Data source problems there may be, but Platt needs to spell out how and in what sense our interpretation of the historical past is unfounded. This he fails to do.

This is not only a singularly unhelpful piece of work but one which is highly damaging to the profession. No one, not least Platt, gains from a catalogue of supercilious comments about one's colleagues, be they dead or alive. The implication that all scholars have used data blind to their shortcomings and without taking account of their deficiencies is an insult not just to the individuals lined up for abuse in this book but to the discipline as a whole. Economic history has come to a very poor pass if we are seen to have degenerated, as Platt has done, to uninformed sniping.

University of Leeds SUE M. BOWDEN

JOHN RICHARD EDWARDS, *A History of Financial Accounting* (London and New York: Routledge, 1989. Pp.326. £35.00).

The stated purpose of this book is to outline and examine some of the major developments in accounting. The intended readership includes those studying accounting as well as those who are professionally qualified, and the author believes the book 'should also prove useful to the business and economic historian keen to find out more about the financial practices employed by businesses at particular points of time in the past'.

The book is interesting reading for accountants, but probably of limited value to business historians since it does not meet either of their principal needs. It is neither a source document from which to extract wanted facts, nor does it present an interpretative, coherent historical argument to explain what accountants have done over the years, and why. The indexing and bibliography are rather patchy, the text lacks hard data (it is ironic that an accountant presents so few numbers), and there is little to explain the accounting jargon to non-accountants.

The book is best viewed as a series of essays on selected topics. The chapter material is often quite self-contained, useful material for students who have already taken an introductory course or two in accounting. Edwards is best known for his important work on primary source documents from nineteenth- and early twentieth-century accounts. He knows a lot about the technical details of accounting records, and much the best sections of the book are Parts III and IV (Chapters 10 to 19) on company disclosure issues from 1830 to the present day.

But he has not trained as a professional historian. This book tries to provide explanations for developments in accounting practice, but it contains too many assertions inadequately supported either by theory or evidence. By contrast, a trained historian, even one knowing little about accountancy, can describe a lot of historical accounting material which is valuable for later research, like Edgar Jones' *Accountancy and the British Economy: The Evolution of Ernst & Whinney, 1840–1980*. Indeed, accountants can do this too, as in the histories of the Society of Incorporated Accountants by Garrett (1958), and of the Institute of Chartered Accountants in England and Wales by Howitt (1966), and works by R.H. Parker and S.A. Zeff. Even judged as an interpretative study, Edwards adds little to Nicholas Stacey's 35 year old text *English Accountancy, 1800–1954*.

This is hard criticism, and in all fairness to Edwards it must be said that there are probably very few working in Britain today who could do a better job. There are less than four hundred academics in accounting and finance in British universities altogether, and few of these have had the benefit of doctoral training (and then not in history) since they usually take a professional accountancy qualification instead. This is a rich potential field for inter-disciplinary collaboration between accountants and historians.

It is a formidable task to review and interpret the whole of financial accounting from 4,000 BC to the present day. A rather similar American book, Previts and Merino, *A History of Accounting in America* (not cited by Edwards), also suffers from uneven quality throughout the text. One weakness of Edwards' book is inadequate attention to American influences on British practice. Thus in Chapter 18 he commends Sir Josiah Stamp as company secretary of Nobel Industries for including group assets and liabilities in the Chairman's 1922 report, but misses the key fact that Stamp learned about group accounts, then virtually unknown in Britain, from a visit to Du Pont de Nemours in America in 1920.

University of Lancaster MICHAEL J. MUMFORD

JOHN WEISS, *Industry in Developing Countries: Theory, Policy and Evidence* (London: Croom Helm, 1988. Pp. xvii + 347. £35).

'It is hard', observed J.K. Galbraith, 'to think of a subject on which, viewing the accrued mass of writing, there would appear to be so little unsaid as on industrial development'. Since Galbraith's remark in 1979, if anything the flow of literature has increased. The present book concentrates mainly on this literature which has appeared during the last decade and relates specifically to the experience of less developed countries (LDCs) from the 1960s. The volume of work published by academics and international organisations of which account needs to be taken, and Weiss' well-written overview of this, provides reason enough for the book.

A second, more important, justification, and on which distinguishes this book from earlier surveys, is that, after broadly indicating LDC performance and policy, it sets the industrial development literature firmly in the context of approaches to development economics. Five of the eight chapters consider structuralist, 'radical' and neoclassical assessments of industrialisation and, because these often have so little in common, demonstrates the reasons for the present uncertainties over development economics. Neoclassical analysis, which emphasises the primacy of free trade and the price mechanism, challenges not just the earlier, structuralist perspective represented by economists like Nurkse, Myrdal and Lewis. Because neoclassicals argue against the structuralist 'special case', with its underpinning of institutionalism and economic history, which provided the foundation for the emergence of development economics from the late 1940s, that subject's validity is also called into question. In its purest form, the neoclassical argument sees positive virtue in the demise of development economics. The chapter on radical analysis, much of which may be traced from Baran's work at the end of the 1950s, looks at a number of the main hypotheses. Weiss rightly avoids identifying the literature exclusively with dependency theory, a sort of structuralism writ large, in that underdevelopment grew from the contact of undeveloped countries on the periphery with their developed, core counterparts.

All three approaches to industrialisation of course appeal to the facts, and with so many LDCs there are plenty to choose from. These can hardly be sorted out, as is recognised, in a book dealing principally with theoretical issues. Rather, references to specific countries are sprinkled throughout. Several are to the four East Asian NICs which as the striking examples of developing country industrialisation over the last two decades have strengthened the neoclassical case and challenged radical perspectives. Relations with the centre clearly promoted rather than blocked industrialisation.

Business historians will find in the book useful introductions to a number of topics. There are, for example, good discussions of dynamic increasing returns to manufacturing, the effective rate of protection and domestic resource cost; while economic historians, in light of several recent articles using Gini coefficients and Lorenz curves, may be interested to see reference to a similar literature on LDCs. Although a fair reflection of recent thinking in development economics, some historians may be surprised that a book on industry contains almost no reference to entrepreneurs or entrepreneurship. Businessmen appear primarily in regard to literature on a domestic or *comprador* bourgeoisie. Weiss observes that 'data on the origins and behaviour of domestic industrialists in developing countries remain scanty' (p. 156).

Because the book aims at analysis, its survey element, as Weiss acknowledges, is selective. Most specialists in aspects of industrialisation or particular regions could probably point to what they regard as significant gaps in coverage. This limits the volume's value as a reference source. The main use will be for courses in development economics, where the book will find its way on to the reading lists of students and their lecturers.

University of Durham W.G. HUFF

LINDA WEISS, *Creating Capitalism: The State and Small Business since 1945* (Oxford: Basil Blackwell, 1988. Pp.xii + 272. £29.95).

The title of this book is potentially misleading. It is essentially a study of the Italian small firm sector (micro-capitalism) and the way in which it has been promoted by state policy. It is only in the second, and much shorter, part of the book that Weiss addresses the broader questions raised by its title. Nonetheless, the book does generalise from the Italian experience to consider other economies and the broader literature on the role of small firms in capitalist economies dominated by giant corporations.

Weiss's overall objective is to show how national configurations of contemporary capitalism – from the spread of micro-capitalism in Italy to the consolidation of big business economies in other European countries – are linked to the domestic and geopolitical activities of states. In particular, she considers a number of substantive issues in order to extract theoretical and practical lessons: why does the extent and importance of small capital vary so remarkably within mature capitalism? Do all societies have similar potential for the development of a small firm economy; or are some more likely than others to witness its rise and expansion? Why, in particular – and in contrast to the prevailing pattern of development – has micro-capitalism become such a weighty force in some advanced industrial settings, such as Italy? And why, more generally, has the ascendency of big business and the demise of petite industry become the dominant trend of twentieth-century industrial capitalism?

From this emerges the central conclusion that capitalist development is inherently neutral; that historically the concentration 'imperative' is linked more strongly to politics than to markets; and that, therefore, what matters is the way in which states, in pursuit of their own objectives, operate within economic systems. This broad conclusion will come as no surprise to the business historian. It is, however, argued with some finesse and with reference to a wide range of sources and methodologies. The result is a most interesting case study which shows why in a politically unstable Italy the dominant political party, the Christian Democrats, pursued a micro-capitalist strategy as a means of promoting certain authority and ownership structures which could create social cohesion by transcending the capital–labour divide. In this sense the book is much more a study in political economy than orthodox business history.

That the small firm sector should not be viewed as an anachronism is powerfully argued as part of a general case that at the end of the Second World War OECD economies faced a major choice between the high road of big business corporatism, thereby eliciting adjustment behaviour on the part of organised labour by incorporating collaborative relations into their political systems, and that of the low road of 'dualism', which eschewed trade union participation by incorporating such relations directly into the economic system itself. The majority chose the former; Italy the latter, for reasons fully discussed in a context which allows their generalisation to the circumstances of other countries.

All of this is well-argued. What, however, is most unclear is what were the economic costs/benefits of this political strategy. We are told little about economic performance, only about structure. There is a throwaway line that micro-capitalism is not dependent upon the spaces where economies of scale are inoperative, but no demonstration of this proposition with hard empirical evidence. This and related flaws will not satisfy economists, though as a work of business history it is a most useful contribution to the post-Fordist literature. It is also one which has great relevance for the current government's attempts to promote small firms in Britain. From the Italian case it can be seen that the promotion of small firms requires a high degree of intervention, which is quite incompatible with the *laissez-faire* policy of the Thatcher government which, according to Weiss, is not interested in small firms *per se*, but rather in using them as a vehicle to re-create an economic culture purged of collectivist elements.

University of Bristol ROGER MIDDLETON

JAMES A. FAIRBURN and JOHN A. KAY (eds.), *Mergers and Merger Policy* (Oxford: Oxford University Press, 1989. Pp.356. £35.00 hardback, £12.95 paperback).

Interest in the subject of this book, like the time series of merger activity in the economy, tends to go in cycles. At present, mainly due to some spectacularly large and hostile bids, public and academic fascination is probably at a peak. The book is the result of a project at the Institute of Fiscal Studies and brings together a collection of papers covering practically every aspect of mergers but with a strong emphasis on policy.

After a general introduction to the main analytical and policy questions by the editors, there follows a very comprehensive survey of the empirical evidence of the impact of mergers on the structure and performance of UK industries by Hughes. For anyone new to the evidence on the complex issues of whether mergers lead to net gains for shareholders and for the economy this paper provides an excellent guide to the now considerable literature on these and related questions. Papers on more specialised areas follow including de-merger or divestment (Wright, Chiplin and Coyne), mergers and the enforcement of profit maximisation (Helm) and the shareholder wealth effects of takeovers (King). Although having different emphases, the three papers share a common theme, namely the nature and effects of the market for corporate control – how and why the takeover process works and whether it is a very efficient mechanism for ensuring that resources pass into the hands of those who can manage them as efficiently as possible. At present, of course, this is an extremely topical question especially when in successful economies such as West Germany and Japan the hostile takeover bid is practically unknown. In earlier discussions of mergers such questions were barely touched. Now, however, they take the centre of the stage.

The second half of the book (chapters 7 to 11) is directly concerned with the operation of policy. First, Fairburn gives a detailed analysis of the evolution of policy in the UK since the passage of the Monopolies and Mergers Act in 1965, illustrating how both the pace and emphasis of the enquiries of the Monopolies and Mergers Commission have changed in different periods. There are then four papers, two by lawyers, Borrie and Swift, and two by economists, George and Littlechild, which discuss past cases, current problems and possible future solutions for merger policy in the UK. For good measure we also have the views of another economist, Hay, on the present position in the USA.

For anyone familiar with the previous work of Professors George and Littlechild in this area it will come as no surprise that they reach radically different conclusions about the ways to improve future policy. Both are in favour of retaining an active policy towards sizeable mergers but beyond this their views diverge. Amongst other things George favours a major change of emphasis, placing much more onus on acquiring companies to demonstrate the positive net benefits to the public of their proposals, while Littlechild argues strongly in favour of an approach which focusses on entry conditions: unless mergers are likely to impede further entry to a market, they should be allowed to proceed.

One point that struck me repeatedly while reading the papers in the latter part of the volume was how few settled questions there were on the overall impact of mergers, despite the substantial body of empirical work which now exists and which is listed in the 25 pages of bibliography. There is little agreement, for example, on whether mergers in the UK have had a net positive effect on the performance of acquired companies. Certainly on the whole their shareholders have benefitted but whether this also applies to the consumers of their products is unclear. In the light of some recent theoretical developments there is also much more scope now for disagreement about the likely consequences for economic performance of a substantial increase in market share created by merger. Future policy on mergers is thus likely to remain complex and 'untidy' and those seeking straightforward solutions will continue to be disappointed.

Taken together, therefore, the papers collected in this book, while not offering fresh evidence on the issues discussed, do provide the most comprehensive assessment of the existing theory and empirical knowledge currently available.

University of Reading MICHAEL UTTON

KULDIP KUMAR ROY *et al.* (eds.), *Business History Studies*, Vol. 1, No. 3 (Calcutta: K.K. Roy, 1989. Quarterly. Annual subscription Rs 360.00 or £34.50).

This is one of the first issues of a new English-language Indian journal established 'to promote an integrated approach in the field of research and study of commerce, economics, entrepreneurial, industrial, professional and trading histories'.

The impressive feature of this issue is its wide chronological and international coverage. Apart from articles on Indian business history, there are essays on Buenos Aires in the early seventeenth century, the industrial expansion of the United States in the late nineteenth century, commercial relations between India, the Indian Ocean and Australia, American fur trade vessels in the East in the early nineteenth century, and interwar Australian accounting history. Some of these articles have considerable problems – the English in the Buenos Aires piece is rather unusual – while others are essentially reports of work in progress, but the catholic and non-parochial selection of topics can only be welcomed.

The two articles on Indian business history discuss important problems but give only few answers. Sushmita Ghosh discusses the decline of entrepreneurship in Bengal, contrasting the eighteenth century where it appeared to be flourishing and dynamic, with the nineteenth and twentieth centuries, when 'Bengali industry sank into moribund silence watched by a host of cluck-clucking onlookers either powerless or unwilling to offer anything more constructive than bucket loads of sympathy' (p.21). She makes the interesting suggestion that the British colonial administration established a reward system which diverted entrepreneurial talent into civil service and the professions. Unfortunately, this idea is not pursued, and instead we are given a short descriptive account of the limited number of Bengalis who did succeed as entrepreneurs over the last hundred years. Omkar Goswami examines the extraordinary rise of the Marwaris as industrial entrepreneurs in the interwar years. From their 1914 roles as traders and speculators in jute, the Marwaris, in this period, not only took over many British companies in the Indian coal and jute industries, but were active in establishing new industries such as sugar and paper. Goswami provides interesting evidence on how the Marwaris used the share structure of British companies to take control of these enterprises. However, he offers no explanation of *why* the Marwaris were so active and successful as entrepreneurs, apart from reiterating the well-known fact that they made largely speculative profits during the First World War and were thus financially well-placed to buy up British companies. India offers a rich field for those seeking to explain the origins of entrepreneurship and its links with particular cultural characteristics.

Although this issue promises more than it delivers, *Business History Studies* is a welcome addition to the family of business history journals published in Japan, the United States, West Germany, Britain and now India.

University of Reading GEOFFREY JONES

G. SHAW and A. TIPPER, *British Directories: A Bibliography and Guide to Directories Published in England and Wales, 1850–1950 and Scotland, 1773–1950* (London: Leicester University Press, 1989. Pp.440. £47.50).

This book will undoubtedly become the standard reference for British directories published before 1950. It is an exhaustive and comprehensive bibliography of holdings in British libraries and provides a guide to the form and variety of directories covering different localities and subjects. It is designed to extend and complement the earlier work of C.W.F. Goss, *The London Directories 1677–1855* (1932) and J.E. Norton, *Guide to the National and Provincial Directories of England and Wales, excluding London, pub-*

lished before 1856 (1950). In addition it provides the first guide to Scottish directories and includes separate coverage of miscellaneous British directories of industry, commerce and trades. The scale of the undertaking is indicated by the sheer size and scope of the publication. Over 2,200 titles are listed (representing 17,943 individual volumes) and references are given to the holdings of 120 libraries and record offices.

There are three sections to the book. Part 1 includes an introduction to British directories and discusses their development since the late seventeenth century. Attention is given to the work of principal directory publishers (notably Kelly & Co.) and a classification of the varied types of directory is outlined. Change over time, in terms of the level of detail and the basic layout of books, indicates the progress of these publications from being simple lists of names of inhabitants to becoming comprehensive guides to towns and districts including not only a wealth of information about commercial activity but also maps and town plans, information on topography and local history, and a wide range of other miscellaneous material on such things as transport connections and public institutions.

Part 2 contains the main bibliography. This is divided into four sections dealing with England, Wales, Scotland and British industry, commerce and trade. The section on English directories is further divided into five subsections: Kelly's regional directories, publications covering large regions, those covering two counties, directories of towns in more than one county, and the greater majority of directories classified by English county. Welsh and Scottish directories are listed at the level of the country or by separate counties. Within each section the entries are arranged in chronological order and in the county sections directories of the whole county precede directories of particular places. Although a little confusing this method of organisation provides a reasonably logical way of classifying directories into mutually exclusive categories and avoids the need for double entries. The final part of the guide lists all the libraries whose collections have been consulted, with useful information about the availability of directory holdings. There are also three indexes covering publishers, place and subject.

As a reference book it is relatively easy to use. The entries for each publication are detailed including, in addition to basic information on title and date, particulars about the type of directory, the scale of maps (if included) and the libraries and record offices which hold copies. Some of this information is provided in the form of abbreviations which presumably is unavoidable but which necessitates cross-referencing to lists provided elsewhere in the text. For any guide which claims to be comprehensive it is tempting to try and spot the omissions. These no doubt are very few in this volume although some more remote locations, such as the Isle of Man, have been given rather incomplete coverage. At a relatively expensive price this is clearly a volume intended for library shelves rather than a wider market and it is likely to become heavily used as a reference by local and regional historians as well as more generally by those with an interest in business and commercial history. Given its price it is a pity that the quality of the printing, particularly the reproduction of extracts and illustrations from original directories, is not as good as might be expected.

Liverpool Polytechnic S. JACKSON

PETER J.T. MORRIS and COLIN A. RUSSELL, with JOHN GRAHAM SMITH (ed.), *Archives of the British Chemical Industry 1750–1914: A Handlist*. BSHS Monograph 6. (Farringdon: British Society for the History of Science, 1988. Pp.xiv + 273. £14.50 – £9.00 to members of the British Society for the History of Science).

Morris and Russell, acknowledging the help of the editor, have undertaken a formidable task, complicated by the difficulty of defining the chemical industry. Was soap-making, right through the nineteenth century and well into the twentieth, a matter of chemistry or cookery? Doesn't the inclusion of Isaac Braithwaite & Son of Kendal 'drysalters, dyers, rope, line and twine manufacturers' (p.27) strain the definition, especially before the invention of aniline dyes? No matter: better too many than too few.

The authors do not claim that their wide-ranging work is comprehensive. The archives listed are almost entirely the archives of companies – close on 1,000 – some still existing either independently or as subsidiaries of large groups, others defunct, and the authors also supply a brief history and bibliography of each company. Generally speaking, however, they have not examined collections which 'do not focus on specific firms', nor have they gone through solicitors' archives, nor, except for a small sample, 'archives of professional and trade organisations, and personal papers of individuals', and 'in order to reduce our task to manageable proportions' (p.x) they have excluded papers at Companies House and at the Public Record Office.

It would be possible, but ungracious, to point out errors of detail, inevitable in work of this kind. What is more to the point is to congratulate the authors, the editor, and all who supported or collaborated with them on producing a work of reference of great value to anyone working in its field.

Business History Unit W.J. READER

PRISCILLA C. GEAHIGAN, *US and Canadian Businesses, 1955 to 1987: A Bibliography* (Metuchen and London: Scarecrow Press, Inc., 1989. Distributed by Bailey Bros & Swinfen Ltd., Folkestone. Pp.589. £39.40).

Priscilla Geahigan's bibliography was inspired by L.M. Daniells' *Studies in Enterprise* (1957). Geahigan's bibliography encompasses business and corporate histories, and biographical research about individual entrepreneurs published between 1955 and 1988. However, she points out in her preface that her bibliography is not a supplement to the earlier work. Geahigan's bibliography is intended to have a wider focus and also includes works relating to various aspects of the operation of individual businesses as well. Her bibliography includes some pre-1955 titles that were not included in Daniells' bibliography. Reprints of pre-1955 books have been included, and a small number of in-house company publications of less than 20 pages have been included where no other sources relating to the company currently exist. Geahigan specifically excludes most newspaper and periodical articles because she believes that there are many newspaper and periodical indexing services available on printed format, compact disc, or online databases. Unfortunately, most British libraries do not have the resources to provide ready access to these services.

While the *National Union Catalog* of the United States' Library of Congress can be used to find references to books relating to American businesses, Daniells' earlier specialist bibliography was one of the few historical bibliographies specifically covering American business history. So Geahigan's bibliography is a welcome addition to the literature. The only other recent bibliography specifically on American business history is Nasrallah Wahib's *United States Corporation Histories: A Bibliography, 1965–1985* (1987). Geahigan's work is somewhat superior to Wahib's bibliography. Geahigan includes references to Canadian businesses, an area also neglected by specialist bibliographies, and her references are more comprehensive than those of Wahib.

Geahigan's bibliography includes over 4,000 items classified according to the two-digit United States Standard Industrial Classification Code. References can be found to a majority of the major American and Canadian corporations. So it will provide a useful starting point for persons embarking on research into the history of many American and Canadian businesses and industries. This bibliography also provides a useful guide to gaps in the post-1954 historiography of American and Canadian businesses. This is perhaps of even greater importance to new researchers. For example, this bibliography reveals a gap in the field of business services, and in particular, advertising.

Geahigan's bibliography does, however, contain one major weakness. It does not include comparative business histories and industry histories. Unless these studies are also consulted, it is not always possible to see individual businesses in the context of the wider business environment.

Wolverhampton Polytechnic RICHARD A. HAWKINS

BOOKS RECEIVED

H. HARTOG, *Public Property and Private Power: The Corporation of the City of New York in American Law, 1730–1870* (Ithaca: Cornell University Press, 1989. Pp.xiii + 274. $12.95 paperback).

M.B.W. GRAHAM, *The Business of Research: RCA and the Video Disc* (Cambridge: Cambridge University Press, 1989. Pp.xiv + 258. £12.95 paperback).

S. WILLIAMS and J. WILLMAN, *Lloyds Bank Tax Guide 1989/90* (London: Penguin, 1989. Pp.352. £4.99).

M. LINDSAY, *International Business in Gorbachev's Soviet Union* (London: Pinter Press, 1989. Pp.220. £30).

B. KINGSTON, *The Oxford History of Australia* (Melbourne: Oxford University Press, 1988. Pp.xiii + 368. No price).

C.B. SCHEDVIN, *Australia and the Great Depression* (Oxford: Oxford University Press, 1989. Pp.xvi + 419. £20 Reprint).

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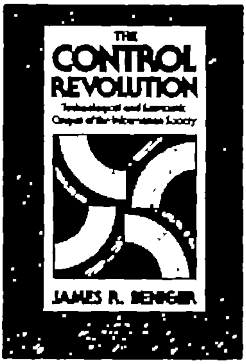
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International Competition and Industrial Change: Essays in the History of Mining and Metallurgy, 1800–1950

edited by
Charles Harvey and Jon Press

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Special Issue on

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edited by Charles Harvey and Jon Press

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ISSUES IN THE HISTORY OF MINING AND METALLURGY

By CHARLES HARVEY and JON PRESS

There is a popular conception of the world today as a 'global village': an interdependent world, united by advanced systems of communications, but held hostage by powerful economic interests – multinational enterprises (MNEs) – with loyalty ultimately to little other than the great god Profit. There is at hand, in support of this view, a welter of statistics and reports of the shares of world trade, investment and income controlled by MNEs; of rates of data transfer over computer networks; of the increased mobility of capital, technology and senior personnel. We are thus brought to a realisation that the world is a small place, moving ever faster, and directed by forces over which most individuals have precious little control. Whatever the validity of the global village concept and its economic and political implications, few people would argue with the proposition that the emergence and growth of the MNE is among the most important facts of modern economic history.

Not surprisingly, therefore, more and more business historians have been drawn to study the development of international enterprise. In recent years, the work of Mark Casson, John Dunning, Peter Hertner, Geoffrey Jones, Stephen Nicholas and Mira Wilkins, among others, has done much to enhance our understanding of the internationalisation of business enterprise. Evidently it has been both a gradual and a complex process; and the organisational forms adopted in the quest for profits overseas have varied greatly over the course of time from company to company. Hutchinson and Nicholas have described the evolution of international business from 'intermediate' forms, such as the overseas agencies and licensing arrangements, through to fully fledged multi-divisional, multinational corporations. Mira Wilkins has drawn attention to the proliferation in the late nineteenth century of free-standing international companies, of which but a small minority developed the organisational and management skills needed to expand their activities into different countries and different products.[1]

Undoubtedly, though, many gaps remain to be filled. Manufacturing multinationals have attracted much attention, yet when the process of overseas expansion began to gather pace in the last quarter of the nineteenth century, it was very often associated with the exploitation of natural resources. And, although emphasis has shifted towards the manufacturing sphere over the course of time, multinational enterprise has continued to dominate the world's extractive and refining industries down to the present day. This collection of essays is intended to shed light upon key issues in the history of mining and metallurgy: issues such as investment and organisation; professionalisation; the impact of technological change; and the problematic relationship between mineral wealth and sustained economic development.

One question which deserves more attention is that of how and when resources are discovered, and the pace of their subsequent exploitation. Most observers – including some eminent economists – have inclined to the view that the discovery of workable mineral reserves is largely a matter of chance, and therefore not susceptible to economic analysis. Certainly, the folklore of mining contains many references to chance finds which triggered mining booms and brought immense wealth to the lucky prospectors. To date, only a few writers have asserted that the discovery of mineral deposits has been economically determined – most notably Geoffrey Blainey, who argues that discoveries have tended to coincide with the trough and initial upswing of the business cycle, when there has been little alternative employment, and cheap capital has been available to fund exploration.[2] Blainey's thesis has been the cause of some controversy, with critics arguing that the mechanisms specified are much weaker than he asserts.[3]

This is not to say, though, that economic explanations of mineral discovery should be dismissed out of hand; and in the first chapter of this volume Matthews takes up the theme of 'serendipity or economics'. Rather than arguing, as Blainey did, that discoveries tend to be made during economic recessions, he suggests that industrial demand should be seen as the driving-force behind the development of the international tin-mining industry. Demand for tin rose sharply in the later decades of the nineteenth century, largely as a result of the expansion of the tinplate industry, and this increase in demand could not be met by existing producers. In the course of time, as the price of tin rose, it became commercially viable to work new mining fields with progressively higher extraction costs, and to substitute capital for labour. In support of this argument, it is noted that many reserves were known long before they became commercially viable. Matthews does not argue, however, that the history of the exploitation of tin can be entirely explained by the marginal costs of extraction. Other factors were also involved, the most important being the steady improvement of transport. In many parts of the world, improved communications were a prerequisite for large-scale exploitation of mineral wealth. Falling shipping costs were a factor, but even more important was the establishment of rail links between mining fields and coastal ports.

In the days before the creation of advanced transport systems, the exploitation of overseas mining fields was commonly in the hands of large numbers of prospectors and small firms. This pattern of development could be observed during the early years of gold mining on the Rand, where Transvaal mining law and the sheer size of the mining region encouraged the establishment of hundreds of small claims.[4]

Many other examples might also be cited; and the pattern was by no means confined to the gold rushes. The Kimberley diamond fields were first opened up by the endeavours of both European and black 'diggers', and in Malaya, before the early twentieth century, the exploitation of alluvial tin was largely in the hands of small-scale Chinese entrepreneurs.[5]

In most cases, however, a process of consolidation soon followed. This was due to falling yields, deeper mining, chemically complex or lower grade ores, and the consequent rise in the costs of development and extraction. Christopher Schmitz has demonstrated that the rise of big business in the world copper industry 'resulted from the logic implied by a series of geological and technological considerations'.[6] Similarly, in the Coeur D'Alene mining region in Idaho, which is examined in Roger Burt's contribution to this volume, production of lead, silver and zinc during the early years of the twentieth century came to be dominated by four big companies, two of which were ranked amongst the world's leading mining enterprises. They had gradually acquired control of the largest and richest lodes, and were best able, through the resources at their command, to meet the challenge of mining efficiently at ever greater depths. In South Africa, too, the progressive shift to deep-level working meant a rise in capital intensity which in turn compelled a reorganisation of the industry. Through a spate of mergers, many of the famous names of the gold mining world, such as Randfontein Central and Consolidated Gold Fields, came into being.[7] By 1902–13, 37 per cent of the Rand's gold, or 11 per cent of world output, was controlled by just three affiliated companies: the Central Mining & Investment Corporation; Rand Mines Ltd.; and their parent, the privately-owned investment house of Wernher, Beit & Co.[8] Also notable were the partnerships which had come to dominate other of the world's mining regions by the 1900s: John Taylor & Sons in the lead districts of southern Spain and the goldfields of India; Tarbutt, Janson & Sons in West Africa; Bewick, Moreing & Co. in West Australia. Companies such as these were closely involved in the promotion of new mining ventures, and made an important contribution to the speculative booms of the late nineteenth century. Yet as time went by they came to lead the campaign for the legitimisation of mining enterprise, and by the early 1900s, 'these firms were now less concerned with share speculation than with long-term exploitation of mineral deposits; production was now more important than promotion'.[9]

Occasionally large firms dominated a mining field from the very beginning. Perhaps the best example of this is the case of copper mining in Spain. The Rio Tinto Co., founded in 1873 to buy the mines from the Spanish government at a cost of £3.68 million, was a highly capitalised venture from its inception. The nearby Tharsis ore-bodies were controlled by the Glasgow-based Tharsis Sulphur & Copper Co.; established in 1867, its issued share capital amounted to £840,000 by 1874.

These were exceptionally large companies by the standards of the day.[10]

Whatever the original model may have been, overseas mining tended, sooner or later, to become the preserve of large firms. In many remote parts of the world, the mining companies themselves had to raise the capital and acquire the expertise needed to develop infrastructures. Substantial engineering works were often necessary – the building of railways, harbours, reservoirs, and power plants – before full-scale mining could start. Even then, mining companies had to make various investments in railway workshops, smelters, chemical plants and offices. Evidently, the exploitation of overseas mining regions was a complex and expensive process, involving much more than just the extraction of the ore.

Another consequence of mining development was large-scale migration, and the creation of new communities. Best known are the floods of migrants who arrived at the goldfields of Australia, California, the Rand and the Klondyke; but many mining fields saw the establishment of new settlements to accommodate the prospectors and labourers. As the workforce grew, some of these settlements became sizeable towns, and the mining companies' responsibility for the well-being of the community extended beyond the provision of housing. At Rio Tinto, for example, the company had by 1885 complete control of the public services of the mining district, including the provision of water supplies, sewage works, markets, schools, and recreational facilities.[11]

Mining developments also had their political side. Mine labour has a long-standing reputation for radicalism and industrial unrest, and in many countries the industry has occupied a central place in the history of trade unionism. Abrasive union-management confrontations were common, from the coalmines of West Virginia to the Lena goldfields or the diamond mines of Kimberley. Many bitter disputes resulted from attempts to tighten industrial discipline and transform self-employed prospectors and miners into wage labourers. Seasonal work patterns, whereby the miners were at the same time small-holders or peasant farmers, persisted in some parts of the world, most notably in Latin America.[12] More commonly, though, they were swept aside by the larger-scale exploitation which resulted from the intervention of European companies.[13] Similarly, the independence of miners began to give way; practices such as the Cornish tributing system, a method of tendering which gave the skilled miner a good deal of control over his work, were either phased out or never allowed to gain a hold in foreign mining regions.

Racial tension was also to the fore in industrial relations. Firstly, the emergence of large companies tended to reinforce Europeans' authority over local labour, and problems often resulted from the imposition of a foreign élite of managers, specialists and skilled workers. In Spain and Mexico, where large companies created hierarchical systems of labour and management, indigenous employees were almost invariably restricted to the lower ranks. Limited prospects of promotion and career advancement in foreign-owned concerns often created resentment, and fed the growth of nationalistic sentiments.[14] Secondly, many difficulties emerged as a result of racial conflicts amongst the workforce. In Mexico's silver mines, violence often flared up among a labour force composed of Cornish, Irish and Latin Americans;[15] and the continuous supply of cheap Chinese labour, though undoubtedly a most important factor in the early development of Malayan tin mining, has contributed to continuing tension with the Malays.[16] Some of the most bitter conflicts occurred on the Rand, where tensions between white and coloured workers were compounded in 1904 by the decision to employ indentured Chinese immigrants. This facilitated a renewed boom in output, but politically it was highly sensitive; white employees became better organised, and through several violent strikes sought to protect themselves against competition from coloured labour.[17]

All workers, regardless of their ethnic background, were liable to be subjected to wage reductions. Mine owners were always cost-conscious, for world markets were highly competitive; and as the richness of the ores declined and capital costs rose owners tended to respond by forcing down wages. On the other hand, skilled labour was at times scarce, and good wages had to be offered to attract experienced workers to the mines. This was particularly true of higher-level skills, for mining did not only need labouring men; as it became internationalised, and operating practices became increasingly capital-intensive and sophisticated, it generated a new breed of mining engineers and metallurgists. The provision of schools of mines and other types of training was one response to this demand; another was professionalisation, a complex and progressive movement vital to the healthy development of the mining industry, and one which led in 1892 to the foundation of the Institution for Mining and Metallurgy. It is clear that, in the process of international development, the role of human capital is just as important as the accumulation and deployment of physical capital, but until recently this has received relatively little attention.[18]

The demand for mining professionals was strong, for in the nineteenth century the industry had acquired a somewhat unsavoury reputation for speculation, corruption, and fraud. Employers and investors alike looked with favour upon engineers with a reputation for financial probity and high professional standards, prepared to travel the world in search of opportunity and experience. Managerial functions followed a similar pattern. *Ad hoc* management began to be superseded by systematic management, with trained professionals supervising the work of functionally specialised departments.[19]

Many of the big companies spread their recruiting nets wide; for if Cornwall's 'mine captains' were long considered the world's leading experts in hard rock mining, Germany was often the provider of the chemists and analysts needed to exploit complex ores and operate large-scale extraction plants. Likewise, leading American engineers gravitated towards important mining companies like Consgold or Bewick, Moreing – men like John Hays Hammond, who was one of the pioneers of deep reef mining on the Rand, and Herbert Hoover, who built an impressive reputation as one of the world's leading mining experts before his entry into politics.[20]

The engineering profession, as Edelstein has remarked, 'is an occupation at the very core of modern processes of accelerating technical change'.[21] As the needs of the industrialised nations grew ever larger and new sources of minerals were opened up, engineers led the way in adopting and developing new methods and processes. In general, the trend was towards deeper mines and less selective mining practices. Methods of supporting roofs, sinking shafts, and tunnelling improved considerably, aided by the widespread use of dynamite and rock drills; by the later 1890s, plans to work the gold-bearing reefs of the Witwatersrand at depths of up to 3,000 feet were already being implemented. At the same time, increasingly sophisticated equipment was developed to work poorer ores profitably by non-selective methods. Mining on this scale required the introduction of labour-saving devices like dredges and steam-shovels, and large-capacity equipment for crushing and milling. At the same time, it was much harder to extract the desired metals from the chemical mixtures produced by non-selective methods; and new methods of extraction, such as the cyanide and flotation processes in gold and zinc respectively, had to be found. Elaborate chemical works were also necessary in the pyrites industry, where a variety of products – principally copper, sulphur and iron – could be produced by a series of treatments.[22]

Clearly, if such operations were to be successful, careful attention to costs was imperative, and the location of metallurgical works was a question of crucial importance: should smelting and refining take place close to the mines, or to sources of fuel, or to markets? As mining companies have grown in size, they have often been tempted towards vertical integration into refining and fabricating. The main intention often seems to have been to instil some degree of control into unstable markets. The metallurgical industries, and the related issue of vertical integration, have begun to receive the attention of business historians, although they remain less well documented than the actual promotion and operation of mining enterprises.[23] In this volume, Newell contributes to the literature by providing a detailed survey of the development and decline of copper smelting in Swansea between 1826 and 1921. The Swansea region possessed important geographical advantages as a site for smelting works – largely because abundant supplies of cheap fuel were close at hand. Fuel costs made up nearly half of total smelting costs during most of the nineteenth century. Smelting in the area was characterised by the 'Welsh process', based on reverbatory furnaces and a careful admixture of suitable ores, which for many years formed the basis of a highly successful industry.

In the late nineteenth and early twentieth century, however, Swansea entered upon a serious and eventually terminal decline. Newell argues that this decline did not indicate technological backwardness or entrepreneurial failure, but was, in fact, beyond the control of the Welsh smelters. The key factors were the exhaustion of ore supplies suited to the distinctive 'Welsh process', and the emergence of new technologies which encouraged vertical integration of mining and smelting. The lower-grade ores which were now being exploited (in America, for example) could not be economically transported long distances in their raw state, but technological improvements reduced the fuel-to-ore ratio and favoured the processing of the metal close to the ore-bodies rather than fuel supplies. First the smelting of ores, then the treating of regulus (partly-smelted ore), and then the refining of the metal itself moved towards the sources of the ore.

Forces making for vertical integration were also apparent in other metallurgical industries. On occasion the lead has been taken by metallurgical firms which have undertaken backward, as well as forward, integration. One of the best examples of this is provided by Alcoa (the Aluminum Company of America), the subject of a recent book by George David Smith. The firm was founded in 1888 to exploit Charles Hall's patent for making aluminium through electrolytic refinement. In the following decades, Alcoa's managers moved to control bauxite supplies through the acquisition of mining subsidiaries, and vigorously developed new interests in manufacturing – from kitchen ware and electrical wire to bicycle parts – to achieve domination of the market.[24]

A consideration of the logic of vertical integration leads naturally to questions of internalisation and the process of corporate growth. The increased size and market share of the world's leading mining firms resulted partly from internal growth, but it resulted also from aggressive merger activity. In the copper industry, Anaconda and its leading American rivals all grew rapidly from the 1890s by means of both horizontal and vertical integration.[25] Elsewhere in the world, less obvious channels of control were also common. Many of the new concerns which emerged meet Wilkins' definition of the 'free-standing' company, although it is important to take note of the complex networks of promoters and directors which often linked them informally. Crucial to this process was the fact that, since the third quarter of the nineteenth century, the western world has been able to draw upon highly efficient financial markets. In a recent paper, for example, Hennart demonstrates that the record of early European involvement in Malayan tin is consistent with the predictions of recent theories of the MNE. He is, however, at odds with some previous writers in emphasising that 'the crucial advantage that established the continued dominance of Europeans was not their possession of proprietary know-how ... but their privileged access to capital'. Chinese entrepreneurs, though controlling the best tin grounds, had no domestic sources of long-term finance to draw upon, nor the business connections with the European investing public that would have permitted a London flotation; thus they lost out when capital-intensive dredging techniques became normal.[26]

As trade in raw materials and capital flows became progressively more substantial, the mining industry was internationalised, and London emerged at the centre of a global industry. Perhaps two-thirds of the £6 billion raised on the London Stock Exchange between 1865 and 1912 went into overseas ventures,[27] and the mineral industries, along with utilities and transportation, were major beneficiaries. It was the American and Spanish mining booms of the early 1870s which really established London as the focal point of the world mining industry. In the next 40 years, the City took a leading role in mining finance and speculation, with some 8,408 companies being registered for mining and mine exploration abroad between 1880 and 1913.[28] London, moreover, was the main channel for foreign as well as domestic savings; French and German stockbrokers and investors participated eagerly in the Rand promotions of Wernher, Beit & Co., while the Rothschilds and their European associates were active in the Exploration Company and elsewhere.[29]

The role of the City of London as a provider of capital and know-how is taken up by Harvey and Press in their contribution to this volume. They provide new estimates of the scale and distribution of metal mining investment channelled overseas by London-listed companies before 1913. South African gold mining is confirmed as by far the most important target for investment, but numerous other countries and nations also proved attractive to investors. Mining company formation, promotion, management, and consolidation are the main themes of the essay.

But despite the importance of the London Stock Exchange as the world's leading source of mining finance, over the course of time other centres of finance and expertise have emerged to challenge Britain's supremacy. They include America, Australia and South Africa. One of the best works on South African involvement is Duncan Innes' study of the massive Anglo-American conglomerate. In this neo-Marxist interpretation, he examines many of the uncritical assumptions and unexplored questions passed over in Theodore Gregory's classic work on *Ernest Oppenheimer and the Economic Development of Southern Africa* (1962). The Anglo-American group may have concentrated on southern Africa, but it has nonetheless become a truly multinational concern with interests ranging across five continents and 45 countries – an achievement which, for Innes, expresses the growing strength of monopoly capitalism in South Africa.[30] This theme of the international diffusion of South African capital and entrepreneurial skill is taken up in Katzenellenbogen's article on South African investment in Australia before 1939. South Africa, he demonstrates, soon set out in its own right as a provider of capital and expertise for ventures throughout the southern half of the continent, and then in other parts of the world as well. The lure of gold mining in Western Australia and Queensland was particularly strong, and South African companies have continued to make an important contribution to Australian mining down to the present day.

Although the growth of monopoly capitalism has been often been highlighted as one of the principal characteristics of the world mining industry, even the biggest firms seem to have been largely unable to reduce price competition and stabilise prices. Admittedly, some attempts at raising world prices above competitive levels were successful in the short-term. Perhaps most dramatic was that of the Société Industrielle et Commerciale des Métaux, headed by Hyacinthe Secrétan, which tried to corner the copper market in 1887–89. After a period of sharply falling prices, Secrétan believed that prices would soon begin to rise, and that vast profits could be made if the company could acquire control over the market. Supported by major European financiers, the company set to work on a grand scale, and prices were driven sharply upward. Early in 1889, however, it collapsed – leading to the halving of copper prices as accumulated stocks were unloaded on to the market. The Secrétan episode is often viewed as a classic illustration of the difficulties involved in manipulating metal markets. Herfindahl's seminal study of copper prices and markets suggests that attempts to fix prices and control the market were largely unsuccessful, and that prices fluctuated markedly between the 1870s and the 1930s. Super-normal profits were not achieved by the largest companies. He concludes that 'there is a body of opinion that tends to credit the copper industry with a degree of monopoly power that it does not have'.[31]

The volatility of prices has had important social consequences, for it can put intense pressure on whole communities. The drastic falls in world copper prices between the early 1870s and the late 1880s, for example, had a disastrous impact on the regional economy of south-west England.[32] Another example is provided by the experience of the British coal industry between the wars. In the 1920s, coal producers were faced by serious problems of excess capacity, largely caused by the contraction of world markets and fierce price competition from foreign rivals. The economic, political and social consequences were severe, and are well documented. The British government was aware of the need to concentrate production in the most efficient units, and began to encourage voluntary rationalisation in the industry as a means of reducing real costs. In the following decade, however, the government began to intervene more directly in coal mining, with the introduction of proposals for compulsory amalgamations and the control of markets through cartelisation. Central to this policy was the 1930 Coal Mines Act, which established the Coal Mines Reorganisation Commission. The general consensus has been that, for various reasons, the Act failed to meet its objectives, and, indeed, may actually have retarded the process of rationalisation.[33] Boyns' essay, however, reassesses the arguments and the supporting statistical evidence, and argues for a more favourable assessment of the Act's contribution to structural change in the industry.

The involvement of the UK government in mining before and after the Second World War is typical of the strong political passions aroused by the industry. In the twentieth century, the activities of powerful monopolistic or near-monopolistic companies have caused governments or other agencies much concern. The exploitation of mineral resources, furthermore, has so often taken place in the world's less developed countries, that it has become a very important aspect of relationships between host governments and foreign-based multinationals and between mineral extraction and sustained economic development. In recent years, an extensive literature has appeared on these themes.[34]

In many cases, it has been demonstrated that an influx of foreign capital was crucial to economic development. The development of gold mining in Brazil, for instance, was heavily dependent upon the injection of British finance into an industry which, in the eighteenth and early nineteenth centuries, had been chronically starved of capital.[35] Harvey and Taylor have argued that in Spain, too, foreign capital and mining enterprise created employment and prosperity where none had existed, and 'awakened many Spaniards to the requirements, demands, and potential benefits of technological and industrial modernisation'.[36] Other writers have emphasised that the outcome of foreign direct investment in mining depends to a great extent on the nature of the host economy: whilst it may stifle local initiative where the impulses to economic change are weak, an emergent élite of indigenous businessmen, such as existed in the Basque region of northern Spain, may be able to grasp the opportunities offered.[37]

Nevertheless, nationalist critics remain unconvinced; whilst recognising the local efficiency of MNE activity, they emphasise the costs to the host nation, generally arguing that the foreign capitalists invariably take the largest slice of the cake. As a result, a variety of attempts have been made to regulate MNE operations. These include heavy taxation, restrictions upon the employment of foreigners, limitations on the remittance of profits to parent countries, and checks on transfer pricing. The results have often been disappointing, causing nationalists to demand tougher measures. In the relatively recent past, nationalisation or confiscation have ensued in quite a few countries. These include Algeria, Bolivia, Burma, Chile, Guyana, Ghana, Peru, Zaire and Zambia. To some extent at least, these developments have been prompted by the realisation that governments can 'buy in' expertise rather than relying on the resources of foreign companies. In quite a few cases, former owners and executives have been kept on as managers of newly nationalised concerns.[38]

Even in more advanced economies, the growing presence of powerful vertically integrated companies in mining and metallurgy has led to continuing fears about their monopolistic natures. In Smith's book on Alcoa, for example, the company is depicted as a progressive and generally benign monopolist, innovative and well led, with an informal, if highly centralised, form of leadership. But, despite its impressive record in World War Two, Alcoa was the subject of a major anti-trust suit, which led in 1945 to the ruling that its monopolistic position was illegal, irrespective of how it used its power. The company had to sell assets, and to adapt to a world of increasing competition from new American rivals, foreign firms, and new materials such as plastics.[39]

Critics have also come to question whether mining enterprise, however owned and managed, is actually capable of generating sustained economic growth. Mineral wealth has often been seen as a strategic national resource, capable of lifting the communities it created, and the national economies of which they were part, into the mainstream of material progress. Yet the world is dotted with the names of once-famous and vigorous mining communities which have now dwindled to mere shadows of their former prosperity, and it has been argued that mining has severely distorted national economies, bringing bitter labour disputes and political tensions in its wake. This has led many to ponder whether the expectations were exaggerated or misconceived, or whether the wealth the mines produced was misused. Such questions have been at the heart of the debate over the costs and benefits of mineral exploitation, and are examined in Dow's essay on metal-mining and Canadian economic development. He notes the popular view that metal-mining has been a staple industry of powerful benefit to her economy, but points out that in fact Canada failed to build on its mining industry to create industrial diversification in the course of the twentieth century. To support his argument, he uses the economic concepts of linkages and economic rent, and concludes that 'Canadian economic development based on extractive industry ... was impeded by a view of property rights and a pattern of ownership inimical to the full achievement of the economy's development potential'.

Doubtless, the issues which have been explored in this introduction will continue to generate impassioned debate as international enterprise tightens its grip on the global economy. Mining and metallurgical history is a rich, if neglected, area of study, with much to offer in many spheres of academic enquiry. The essays which follow indicate something of the range of possibilities, and add directly to our knowledge of the mineral industries.

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SERENDIPITY OR ECONOMICS? TIN AND THE THEORY OF MINERAL DISCOVERY AND DEVELOPMENT, 1800–1920

By DEREK MATTHEWS

The contribution of economic historians to an understanding of the process of mineral discovery and development has been modest and amounts largely to the debate around the theory of Geoffrey Blainey, first put forward in 1970.[1] Blainey was concerned to dispel the view harboured by eminent economists like Keynes, Schumpeter and Hansen that the discovery of gold was largely a matter of chance and therefore outside the scope of economic analysis. Using evidence for the discovery of a range of non-ferrous metals in nineteenth-century Australia, Blainey attempted to show that this coincided with the trough and initial upswing of the business cycle. This he explained by the fact that in a depression more people are unemployed and turn to looking for minerals, while there is also spare capital and interest rates are low, which assists the financing of prospecting and development.

This thesis was attacked by Morrissey and Burt, who showed that there was no statistical correlation between fluctuations in business activity in Australia and the output of selected minerals.[2] In a rejoinder to this, Blainey correctly made the point that he was concerned only with initial discovery and not with subsequent mineral output.[3] More significantly Morrissey and Burt maintained that Blainey cast his definition of depression so wide as to include 20 out of the 28 years between 1862 and 1890. While giving no reason for confining their analysis to these years when Blainey seems to be referring to the 1840–1900 period, Morrissey and Burt do seem to establish the fact that Blainey's definition of the decline in business activity is not tight enough properly to prove his case. His need to invoke local droughts in pastoral areas to account for the discovery of three mineral fields further weakens his argument.

More recently, indeed, Mel Davies has taken droughts as the primary cause of mineral discovery in South Australia.[4] Davies also dismisses Blainey's model by maintaining that, while initial discovery and development required little capital or labour, during one period of mineral discovery in South Australia, 1842–45, there were in fact shortages of labour and capital; while in another, 1860–61, although labour was in surplus, capital was scarce.[5] Instead Davies argues that, since pastoralists were the main discoverers of minerals in South Australia, periods of drought, which led sheep into pastures new in search of grazing, account for the mineral finds there. But there are many problems with this argument. First, the quantitative evidence in terms of the rainfall figures that Davies gives is inconclusive. He does not offer a definition of drought but asserts that extreme drought was not conducive to mineral exploitation because of the shortage of feed for livestock used for transport. Using Davies' figures, the years of major discoveries, 1842–45, had rainfall 15 per cent below average, but no evidence is offered that this was sufficient to scatter flocks in search of food. Moreover, in the period 1851–63 there is no correlation between rainfall and mineral lease applications; 1861–62, for example, was a peak year for applications yet had above average rainfall.[6] Nor does Davies give documented examples of discovery resulting from straying sheep in a drought; the one instance of discovery via wayward sheep he does give came as a result of a thunderstorm![7]

Returning to Blainey, he was not, of course, the first writer to suggest that mineral discovery, and gold in particular, was economically determined, and he seems aware that the most plausible counter-theory to his own is that the price of the metal was the major factor in discovery. Blainey notes that Kondratieff, in his theory of the long waves in business activity, argued that gold discoveries came when prices generally were low and therefore the value of fixed priced gold was high.[8] Among a number of points Blainey argues that the hope of finding a bonanza would outweigh consideration of the price of the metal and that prospectors would not 'have possessed the sophisticated knowledge that the purchasing power of gold was rising'. Yet Blainey himself concedes that 'as gold was relatively more valuable in a recession, it is perhaps plausible that the main stimulus in a recession was towards the search for gold'.[9]

Morrissey and Burt offer no explanation of mineral discovery of their own except to say that the flow of funds into mining was stimulated by the 'attractive force of the profitability of mining or expectations about its profitability'.[10] Unfortunately, in view of this contention, they did not find room among the 14 other variables they built into their model for the prime consideration with regard to profitability – the price of the metals under review.[11] Instead, they return to the familiar orthodoxy:

> Whilst it is by no means impossible that fluctuations in the economy as a whole might exert an influence on the profitability of mining, we would contend that this was a minor influence in determining profitability, when compared to the results of unpredictable changes in quantity and quality of the ore lodes worked. Evidently, these changes cannot be predicted by economic analysis.[12]

One of the surprising aspects of Morrissey and Burt's conclusion, and indeed the whole debate with Blainey, is that there is no reference to the considerable body of resource economics, theoretical and empirical in nature, which bears directly on the question of mineral discovery and exploitation. The seminal economist in the field was

Orris Herfindahl, whose main contribution was to establish that economic theory could be as usefully applied to the minerals industry as to any other.[13] Taking the examples of the oil industry, and in more detail the copper industry, Herfindahl was able to demonstrate that exploration was a systematic process and that discovery was a response to long-run changes in supply and demand in opposition to the established view that discovery was a random variable.[14] For example, in explaining developments in the copper industry, which exhibited relatively stable prices in the long-run, the process of discovery and development according to Herfindahl went as follows. As demand for the metal increases prices will rise and exploration activity will increase; as new mines are discovered and developed output will increase and the price of the mineral will fall to the original level. Output remains high as does the level of exploration to maintain this new level of production.[15]

It is the intention of this article to show that another mining industry – tin – also yields to elementary neo-classical price theory; it has the further purpose to show that on to the base of economic determinism the superstructure of institutional organisation and political change can also be built.

I

In applying Herfindahl's methodology to the tin industry, the first prerequisite is, of course, accurate data. Unfortunately, output figures, particularly prior to 1870, are not much better than guesswork. Hitherto writers have relied on the data from the *Statistical Yearbook* of the International Tin Council (ITC), which began in 1939, and while these seem to be reasonably accurate for Cornwall and the Dutch East Indies (present day Indonesia, hereafter called the East Indies) up to about 1870, the figures for Malaya and Siam are clearly rough estimates.[16] For example, the ITC gives a combined Malaya/Siam figure of 4,700 tons for the 1830s, yet contemporary estimates put the output of Malaya as 2,052 tons in 1835 or 1,300 tons in 1837, while Falkus's recent figures put Siamese output at no more than a few hundred tons.[17] Table 1 gives the import figures into the Straits Settlements from 1844 to 1873, based on the customs returns; these are consistently lower than the export returns, confirming the known occurrence of smuggling to avoid the 15–20 per cent duty on tin imported into the Straits. Therefore, since almost all trade from Malaya and Siam passed through the Straits, the export figures (which also match reasonably well with the import figures into Europe) are the most reliable measure of output by these two producers.[18] Clearly, then, the ITC data overestimate Malay/Siamese and in turn world output prior to 1870.

Table 2 shows the reworked figures; world output in 1845, for example, is given as 12,000 tonnes compared to the ITC estimate of

TABLE 1

TIN TRADE THROUGH THE STRAITS SETTLEMENTS, 1844–73

('000 tons)

	1	2	3	4	5
Years	Imports into Straits from Malaya	Imports into Straits from Siam	Total imports into Straits (1+2)	Exports from Straits	ITC estimate of Malayan and Siamese output
1844–48	1189	223	1412	2446	5,400
1849–53	1370	470	1840	3658	6,100
1854–58	1309	1054	2363	3750	6,500
1864–68	2465	3069	5534	7919	8,500
1869–73	3992	4609	8601	10069	8,200

Sources: Column 1: Wong Lin Ken, *The Malayan Tin Industry to 1914* (Tucson, 1965), p.30; column 2: M. Falkus, 'Aspects of the Development of Tin Output in Siam and Malaya, 1870–1914' (Paper presented at International Mining History Conference, University of Melbourne, 1985), Table 1; column 4: Wong Lin Ken, 'The Malayan Tin Industry to 1914' (unpublished Ph.D. thesis, University of London, 1959), p.32; column 5: C.J. Schmitz, *World Non-Ferrous Metal Production and Prices, 1700–1976* (1979), p.371.

14,600. It was thought worthwhile to give the ITC figures for world output in graph form in Figure 1, but (as Table 2 shows) this probably understates the acceleration in growth in the second half of the nineteenth century. The trend growth rate through the period is between three and four per cent per annum; in the 1860s this goes up to five per cent and in the 1870s to seven per cent. Fortunately, there are more reliable series for tin prices and when these are deflated with indices of other commodity prices to give some indication of the real value of tin mined, set out in Figure 2, this shows an upward trend with the increases being most marked in the latter half of the period, matching the increase in output.

A model in explanation of this situation can be built up in the following way. The demand for tin in this period derived principally from the demand for tinplate; as early as 1805 between a third and a half of the tin produced in Cornwall was said to go into tinplate, while the proportion had reached two-thirds of the tin consumed in Britain by 1860–70.[19] By the turn of the century the USA had overtaken Britain as the world's largest tin consumer and there, although only 26 per cent of the tin went into tinplate in 1917, another 36 per cent went into solder

TABLE 2
WORLD OUTPUT OF TIN, 1835–1920
('000 tonnes)

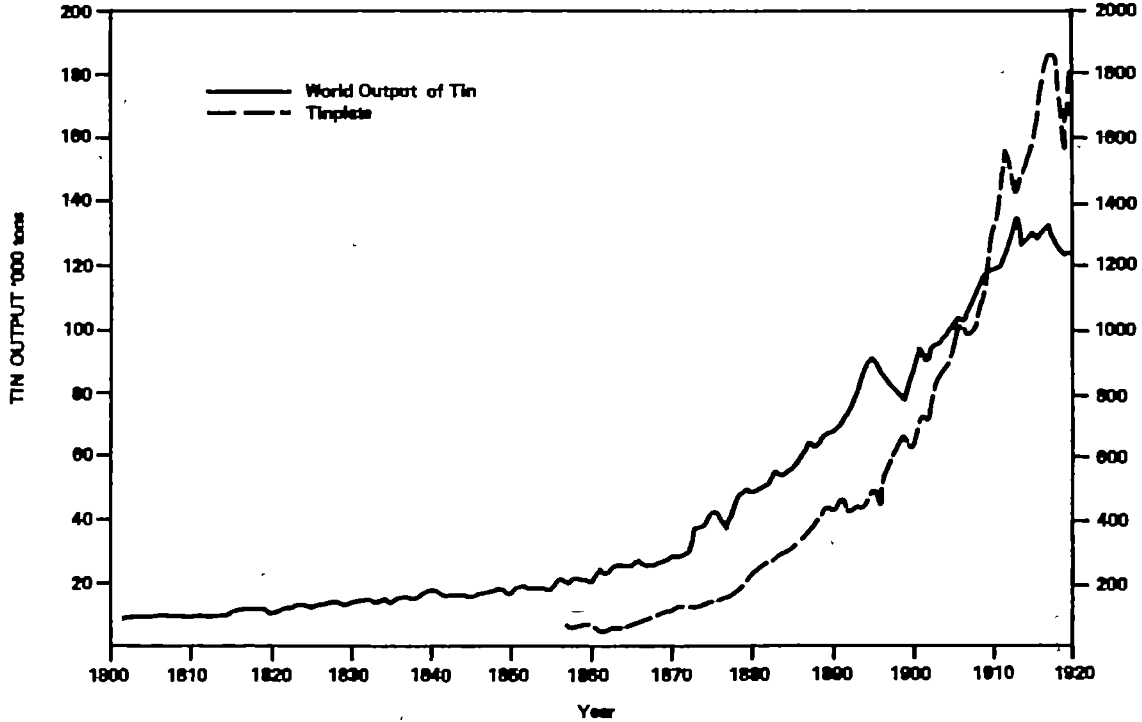
Year	World Total	Britain	East Indies	Malaya	Siam	Australia	Bolivia	China	Nigeria	Others
1835	8.6	4.4 (51)	2.2 (26)	2.0 (23)						
1845	12.0	5.3 (44)	3.3 (27)	2.9 (24)				0.5 (4)		
1850	14.2	6.8 (48)	3.2 (22)	3.7 (26)				0.5 (3)		
1860	18.5	6.8 (37)	5.4 (29)	5.8 (31)				0.5 (3)		
1870	28.4	10.4 (37)	7.5 (26)	5.6 (20)	4.2 (14)	0.1 (-)	0.1 (-)	0.5 (2)		
1880	49.3	9.1 (19)	9.4 (19)	11.4 (23)	4.6 (9)	10.4 (21)	0.4 (1)	4.0 (8)		
1890	66.1	9.0 (15)	12.6 (19)	27.2 (41)	4.4 (6)	7.4 (11)	1.7 (3)	3.8 (4)		
1900	86.1	4.3 (5)	17.9 (21)	43.1 (50)	4.4 (5)	4.3 (5)	9.1 (11)	3.0 (3)		
1910	114.6	4.9 (4)	21.7 (19)	45.9 (40)	4.8 (4)	6.8 (6)	22.8 (20)	6.5 (6)	0.6 (-)	0.6 (-)
1920	123.0	3.1 (2)	21.9 (18)	37.0 (31)	6.3 (5)	5.3 (4)	29.5 (24)	10.7 (9)	5.3 (4)	3.3 (3)

Notes: All output figures from Schmitz except as stated below; share of world output in parenthesis. For 1835, the Malayan figure is Newbold's estimate given in Wong; Siamese output is assumed to be negligible based on Falkus; the world total does not include the Chinese output of 2,000 tonnes used by Schmitz, based on the International Tin Council, *Statistical Yearbook* for 1939, which is assumed to be inaccurate. The combined Malaya/Siam output for 1845–60 are interpolations from the exports through the Straits Settlements given in Table 1 of this article. The Malaya figure for 1870 is actually for 1871. Siam figures, 1870–1910, are imports into the Straits from Falkus. Before 1890 these are greatly in excess of the ITC estimates in Schmitz; e.g. Falkus gives 7,214 tons for 1877, the ITC 3,000. The world totals are the sum of the reworked figures above; prior to 1870 these are less than those given by Schmitz, based on the ITC estimates, but after then are roughly in line. 'Others' from 1910 includes small quantities from the Belgian Congo, South Africa, Portugal, Burma, Germany, Japan and Laos.

Sources: C.J.Schmitz, *World Non-Ferrous Metal Production and Prices, 1700–1976* (1979), pp.162–168; Wong Lin Ken, *The Malayan Tin Industry to 1914* (Tucson, 1965), p.20; M. Falkus, 'Aspects of the Development of Tin Output in Siam and Malaya, 1870–1914' (Paper presented at International Mining History Conference, University of Melbourne, 1985), Table 1 and p.6.

and alloys used in bearings in the motor industry.[20] In both uses the tin represented only a small fraction by value of the final product. Although tin represented 20–25 per cent of the cost of tinplate in the nineteenth century this was, in turn, used mainly for packaging, including biscuits, oil and from the 1860s canned food, with the effect

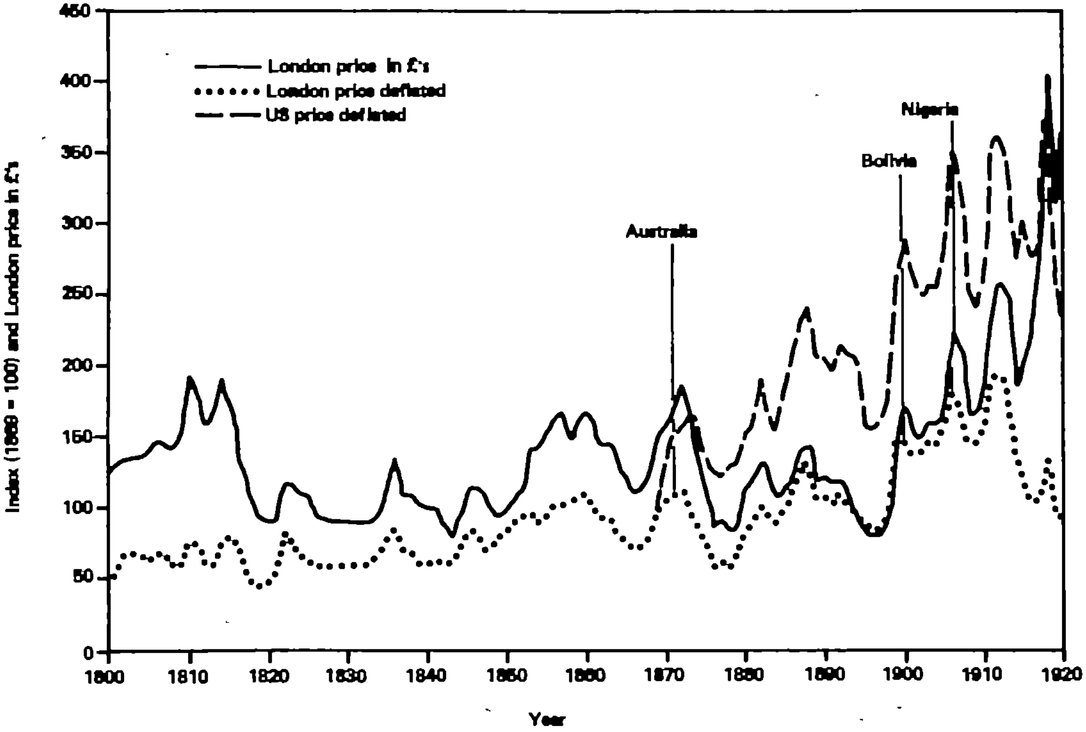
FIGURE 1
WORLD OUTPUT OF TIN, 1800–1920
AND UK AND USA OUTPUT OF TINPLATE, 1857–1920



Sources: Tin output from C.J. Schmitz, *World Non-Ferrous Metal Production and Prices, 1700–1976* (1979), pp.162–168; output of tinplate for the UK from B.R. Mitchell and P. Deane, *Abstract of British Historical Statistics* (Cambridge, 1962), pp.147–48, and for the USA, *Metal Statistics, 1942* (New York, 1942), p.134.

FIGURE 2

TIN PRICES AND THE 'DISCOVERIES' OF TIN, 1800–1920



Sources: London and US tin prices from C.J. Schmitz, *World Non-Ferrous Metal Production and Prices, 1700–1976* (1979), pp.295–297; London price deflated with spliced indices of commodity prices in B.R. Mitchell and P. Deane, *Abstract of British Historical Statistics* (Cambridge, 1962), pp.471–476; US prices deflated by wholesale price index in B.R. Mitchell, *International Historical Statistics* (1983), p.835.

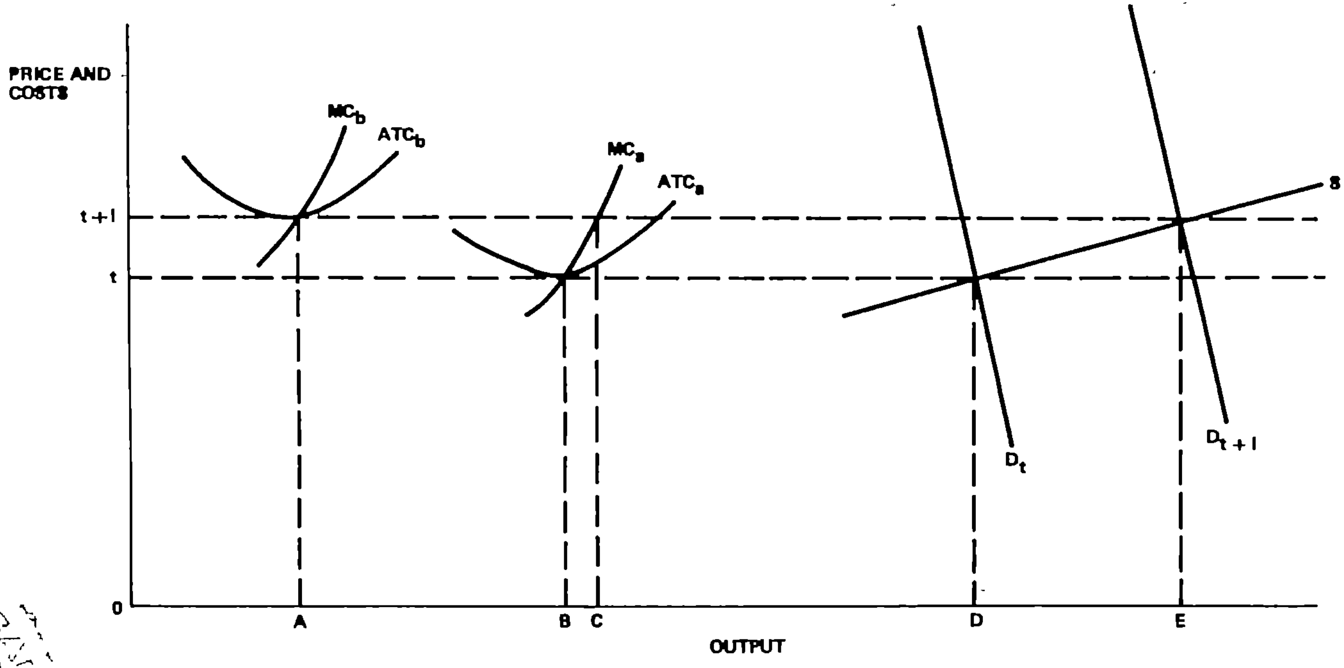
that the value of tin in, for example, a can of meat was less than 5 per cent.[21] Similarly, the value of tin in an American automobile must have been infinitesimal. Therefore, this together with the fact that tin in tinplate and its other uses had no close substitutes, meant that the demand for tin was highly price inelastic.[22] Although it is not possible to calculate accurately for the nineteenth century, present day estimates show low short-run elasticities. Baldwin has estimated that a 20 per cent increase in the price of tin would lead to a fall in demand of only 2 per cent, while in the long-run price elasticity increases to only –0.2.[23]

The highly inelastic demand for tin is analytically very useful. Since, as Figures 1 and 2 show, the increase in the output of tin was accompanied by a rise in price this can only have come about by the dynamic impact of demand on a relatively passive supply schedule. Supply, via for example chance finds of low cost tin, could only have been an active factor if there had been a fall in price, which was the reverse of the case. Indeed, because of the inelasticity of demand however great the fall in the price of tin relatively little more would be demanded and certainly not enough to account for the huge increase in production that did take place. The only plausible explanation of this increase in output is that the growth in tinplate production (see Figure 1) and later automobile output led to continual shifts in the demand curve for tin along a more or less unified long-run supply schedule, the upward slope of which was determined by the need to bring into production higher cost producers and methods of production. These producers were probably always known to have the potential for production but were only made viable by the increase in price.

The simple geometry of this model is set out in Figure 2 where, assuming a perfectly competitive market, the initial price is Ot and output OD, given by the industry's long-run demand curve D_t and supply curve S. A typical mine with average costs of ATC_a produces output OB. If demand now shifts to D_{t+1} thus giving a new price, t+1, this brings into production new higher cost producers, perhaps with average costs of ATC_b and an output of OA. The new output for the industry of OE is made up of the new producers together with a small increase by the existing mines moving along their short-run marginal cost curves, typically MC_a, to OC. This implies that the existing mines are unwilling or unable to increase their fixed investment to meet the increased demand themselves even in the long-run.

This last point postulates a unique aspect of the economics of mining which needs some elaboration. The granting of mineral rights over ground inevitably gives a mine some monopoly power, and in seeking to maximise long-run profits it will usually pay a mine to keep ore in the ground because getting at reserves by taking away ore at the natural pace of the mine is usually more profitable in the long-run than sinking a whole new shaft to increase production. Similarly, where other durable capital is employed, for example a dredge, it will usually pay to keep ore in the ground over the lifetime of the plant. This behaviour of operating

FIGURE 3
WORLD TIN MARKET IN THE LONG-RUN



mines, perhaps unique to the mining industry, has significant implications. It indicates that monopoly profits will be earned by some mines in the long-run in an otherwise competitive industry. It also explains the observed situation where there are high and low cost producers operating often literally side by side, some earning huge profits while others merely break-even.[24] Incidentally, the high cost producer may have a higher or lower output than the low cost mine; that is, in the above model the cost curves of the new firm may be to the right or left of the existing firm. The model also predicts that supply will be highly inelastic in the short-run but more elastic in the long-run; and this is borne out by present-day estimates where elasticities have been found even to be negative in the short-run, as mines switch to their low grade deposits as the price rises, but to have high positive coefficients in the long-run.[25] With low price elasticities of both supply and demand in the short-run wide fluctuations in price are likely to be encountered and this is indicated in Figure 2.

The position of an individual mine's cost curves will be determined by factors including the cost of labour, capital and transport, but most fundamentally by geology. Apart from determining the initial cost of extraction, geology will also dictate the rate of the inevitable long-run increase in costs as a result of the decline in the grade of ore and the eventual exhaustion of the reserves – diminishing returns which would have the effect of moving a mine's cost curves upward and to the left. Where this occurred faster than the increase in the ruling market price of tin the mine would go out of business; this 'economic exhaustion' of the mine is usually likely to precede physical exhaustion.

On to the basic model can now be added a number of exogenous variables. First, in the latter part of the century there were significant movements in the relevant exchange rates. Between the 1870s and the 1900s silver fell in value in relation to gold, so that the silver Straits dollar, for example, devalued by 57 per cent between 1868–72 and 1901–5. This meant that producers who, like the Malayans, sold their tin for gold but paid most of their costs in dollars, experienced a marked increase in profitability above that indicated by the sterling price of tin.[26] Second, there were technological improvements in mining; for example, the invention of dynamite and the perfection of the steam pump and the rock drill. As will be indicated in the following narrative, however, technical change does not seem to have been a major dynamic variable in this period.

Third, and more importantly, there were improvements in transport, the cost of which, as might be expected for a bulky base metal, had a crucial impact on the nineteenth-century tin industry. Analytically, falling transport costs would have the effect of moving the long-run supply curve of tin to the right – possibly, as might be implied by Figure 2, to the extent of outweighing much of the effect on price of the increase in demand in the first half of the nineteenth century. Reductions in ocean freight rates were probably considerable throughout the nineteenth century but a series for tin freights does not unfortunately exist. Undoubtedly, the fall in freight costs meant that the profitability of mining in regions like the Far East, which were distant from the growing points of consumption in the West, increased by more than the London price of tin would indicate. Jones estimated the freight costs of a ton of tin from the Straits to London in 1913 at £6.35 or three per cent of the London price.[27] If we make the heroic assumption that tin freights fell in proportion to those for rice given in *Fairplay*, then the rate would have been £17 per ton, 1870–79, or 17 per cent of the average London price of tin.[28] Before then the burden of freight costs must have been even higher. If they moved in line with the US freight charges given by North, which were 49 per cent higher in 1820–29 than in 1870–79, the cost of carrying tin would have been £25 per ton or 30 per cent of the London price of tin in the 1820s, at which time it was said that transport costs made the east–west tin trade uneconomic.[29]

A further improvement in transport, of course, was the spread of railways and, although they tended to follow the development of a tinfield rather than lead it, here there was an interesting effect at work. If the cost of transport to a field had caused its previous unprofitability, once an increase in the price of tin had justified the provision of this once-and-for-all social overhead capital, the area could then become a low-cost producer and its growth in output might depress world prices in the medium-term.[30] Looking at Figure 2, we can see that after the development of Malaya and the Far-East islands in the 1840s and 1850s on the back of an increase in price, prices then fell in the early 1860s. In the late 1860s, however, they picked up as existing producers experienced diminishing returns in the face of the remorseless increase in demand. Tin prices then reached a new peak in the early 1870s, justifying the exploitation of the remote Australian deposits. When in turn tin poured out of Australia, prices fell back in the later 1870s, only to take off again in the 1880s bringing yet another new crop of producers into the world market. As can be seen, this process repeated itself several times over in the period.

II

The model outlined above denies a role in the development of world tin mining for chance discoveries, or even those prospected for, but explains development rather in terms of the demand for tin and its costs of production. To verify this model conclusively would require accurate and comparable data on mining and transport costs for each region, its mines and the various production methods. Not surprisingly such data are not available; instead this and the following two sections use the quantitative and qualitative evidence that does exist to determine the extent to which the model accurately fits the history of tin mining through the period.

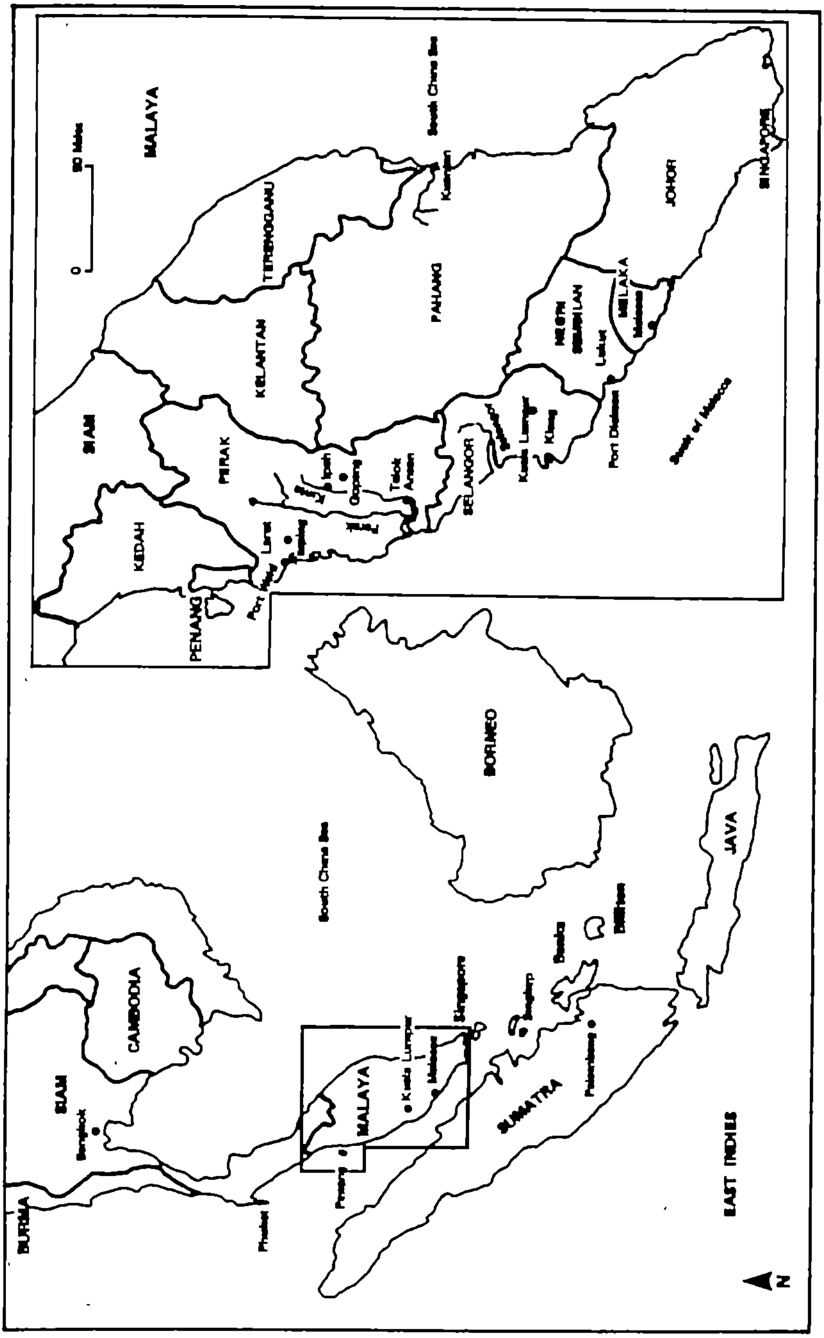
Down to 1870, the ancient tin producers coped reasonably well with the increased demand. In the eighteenth century there had been no integrated world market for tin; it was split between Cornwall, which catered for the western demand for the metal in the form principally of pewter tableware, and the Far East. There, Yunnan in China, the island of Phuket in Siam, Malaya, but most importantly Banka in the East Indies (see Map 1), satisfied the demand for tin from India and China largely for ornamental and ceremonial uses like the tinfoil used in joss-paper.[31] Due to warfare in the East the price of tin increased sufficiently for the British East India Co. to ship tin to the Orient in the period 1789–1816, but for the most part, as mentioned above, the cost of transport prohibited any major east–west trade.[32] In the 1820s, Britain imported only 4 per cent of its consumption, a little over a 100 tons a year.[33]

In the 1830s, imports from the Far East began to be significant; from 1831–35 to 1861–65 they increased from 29 per cent to 45 per cent of the European market. In the same period British eastern imports went from 19 per cent of its tin consumption to 26 per cent, and tin imports from all sources were 63 per cent of the British market by the 1870s.[34] This increase in UK imports has been ascribed to the reduction of import duties from £50 to £3 a ton in 1842, and their abolition in 1853.[35] But tin imports had been rising before this, despite the tariff, as transport costs came down and the demand from British tinplate manufacturers increased.[36] The reduction and ending of the duties probably came as a result of the increased trade in tin, and the consequent demands for abolition from the tin users in Britain, rather than being its cause. The increase in western imports from the East was also reflected in the pattern of trade of the eastern producers. Having sold almost all its tin to India and China in the eighteenth century and the first decades of the nineteenth century, by 1844–48 the Straits Settlements sold 42 per cent of its exports to Europe and America. By 1854–58 the proportion had risen to 71 per cent, and by 1905–9 the eastern market was totally eclipsed, taking only 3 per cent of Straits tin.[37]

As Table 2 shows, Cornwall was relatively successful in increasing output to meet the steadily growing demand for tin up to 1870. It had the inherent advantage that, because Britain was the world's largest consumer of tin, transport costs were low. Moreover, Cornwall's deposits were on or near the coast; as Map 2 shows, nine of the ten largest mines were five miles or less from the sea. In addition, since geologically the tin lodes were often found beneath previously worked copper deposits many mines switched to the former from the latter as the copper was worked out without the need for much additional capital expenditure.[38]

Cornish output held on to half the world market in the first half of the century, after which it lost ground relatively, although output did not peak (at 11,100 tons) until 1871.[39] This increase was achieved based largely on the unusual business structure of the cost-book, unlimited

MAP 1
THE FAR EASTERN TINFIELDS

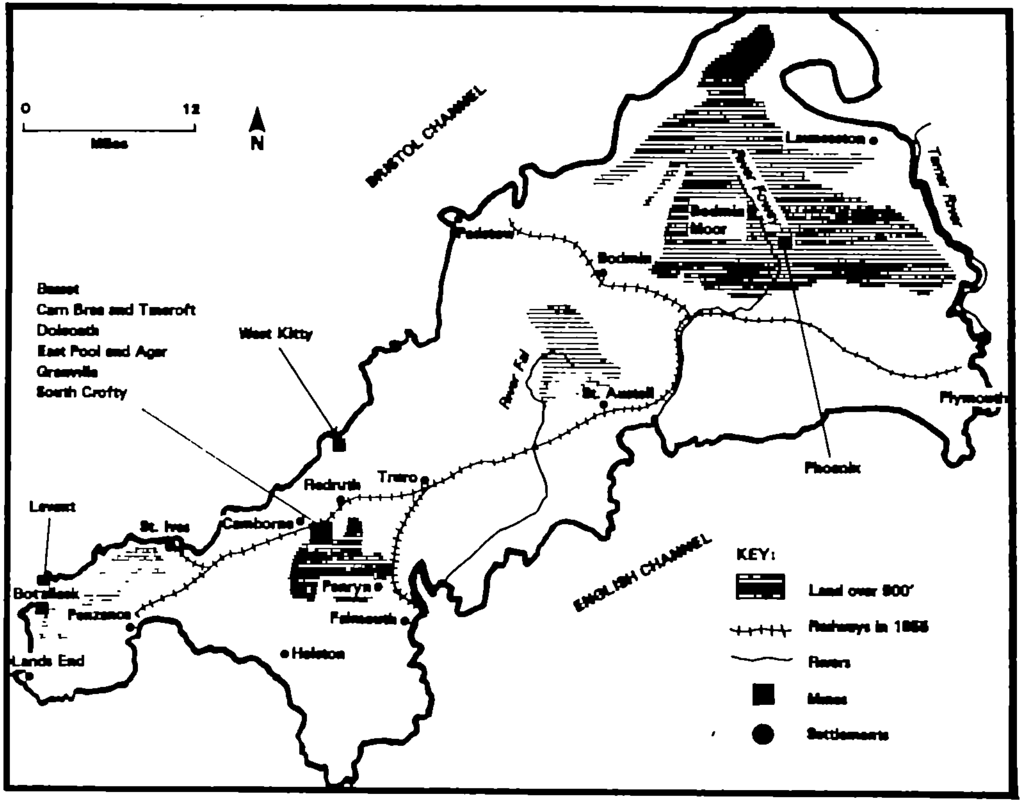


liability, company, which allowed the spreading of the considerable risks of underground mining among a large group of adventurers.[40] The growth in output was also on the basis of the 'tributer', a semi-self-employed labour process, and it featured little technological change. Expansion was largely a matter of multiplying the number of mines, from 75 in 1800 to 307 by 1873, and the number of miners, from 9,000 in 1845 to 26,604 by 1873.[41]

In Cornwall the bulk of the alluvial or 'stream' tin had been worked out by the beginning of the nineteenth century, but in the Far East most of the tin was still found in this form in a geologically unified band running from Yunnan in south-west China, through Siam, Malaya, and terminating in the island of Billiton in the East Indies (see Map 1). Similar geology gave the exploitation of tin in these areas a similar history. Interestingly, there is no shortage of colourful stories of chance finds of tin in the region, and writers have placed a heavy reliance on the importance of tin discoveries for the development of mining in a particular area. For example, the initial exploitation of tin on Banka was ascribed to the accidental smelting of tin when forest was being fired to clear for agriculture.[42] The Larut valley in Malaya was said to have been developed after the accidental discovery of tin there in 1848; while in Kamunting in the 1880s tin was found after an elephant got lost and returned covered in stanniferous mud.[43]

In fact, there is little evidence that there was ever any difficulty locating the widespread alluvial tin; the main problem came in exploiting it commercially, and the pattern of development is explicable, as the model outlined above would predict, by attention to the marginal costs of production. In South East Asia a number of factors were crucial. A major cost in the early years was inland transport, which determined that the first deposits to be worked were those on relatively small islands like Banka or, as in Malaya, on the coast. As these deposits were worked out, however, activities had to push inland with a consequent increase in costs. Another major factor was the richness of the ore. In the eighteenth and early nineteenth century it was still only profitable to 'pick the eyes' of the richest deposits and then move on, but increasingly, as the century wore on, less rich ground had to be worked, and again unit costs increased. Finally, there was the problem of labour supply. In Malaya, for example, up to the 1830s the native population was sufficient to cope with demand, often just mining during the slack periods in agriculture. However, when output needed to be stepped up, the importation of Chinese labour was necessary – not, it is clear, due to the enduring myth of the lazy native but because the limited Malay population was fully employed in agriculture.[44] The necessity of bringing labour from mainland China, usually indentured and financed by Chinese capitalists, again increased the marginal cost of output, particularly in view of the high death rate among the coolies.[45] In 1830, there were said to be only 15–20,000 Chinese in the

MAP 2
CORNWALL



whole of Malaya, but by 1862 there were 20–25,000 in Perak alone, while by 1870 there were 40,000.[46]

At first the Chinese, often working alongside the Malays, used the old methods of sinking shallow pits to win the rich surface deposits and washing the ore in pans or in streams. But when output had to be increased, and the tin won in bulk from less rich land, large gangs of coolies were needed to dig out the ore, which was now washed in artificial channels. The workings were drained by the water-powered 'chain-pump' technology the Chinese brought with them from the paddy field. The chain-pump, however, could not cope with workings much below 30 feet, and the mine would then have to be abandoned and operations moved on, often having taken only 50 per cent of potential tin from the ground.[47]

These Chinese open-cast operations, which dominated tin mining throughout South East Asia until the first decade of the twentieth century, were probably pioneered in the eighteenth century on the small island of Banka which had rich ore deposits and at no point was more than 15 miles from the sea. Chinese labour and enterprise had dominated production from as early as the 1720s, and, as output increased, by the 1770s the island was the world's second largest producer, averaging some 1,300 tons per year, half as much as Cornwall.[48] When in 1816 the island fell into Dutch possession a government monopoly company – Bankatinwinning – was established to handle trading, although production remained in the hands of the Chinese.[49] Output declined or stagnated in the early decades of the nineteenth century, but it began to pick up in the 1830s. Banka supplied the bulk of the increase in tin imports into Europe from the East down to 1860 – 66 per cent of the average total of 923 tons a year for 1836–40, rising to 77 per cent of the annual total of 7,763 tons in 1856–60.[50]

The Malay mainland had produced small amounts of tin for many centuries; it had been mentioned by the Arabs in the ninth century.[51] By the nineteenth century production was scattered widely over the states of Perak, Selangor, Negri Sembilan and Pahang (see the inset in Map 1), but was still undertaken only on the coast or river banks, as tin was transported overland only at great expense by elephant or buffalo. The tin was then imported into the Straits Settlements of Penang, Malacca and Singapore, where the export trade was dominated by the British. In the first half of the nineteenth century this trade was on the increase and comparable in scale to Banka, although whereas almost all Banka tin went to Europe more than half of Straits tin went to India, China and the United States.[52] Output was perhaps 2,052 tons in 1835, 23 per cent of world production, and it expanded rapidly in the 1840s and 1850s, especially from the Lukut area, five miles inland from Port Dickson.[53] But Lukut declined rapidly in the 1860s as deposits dwindled and it was replaced by Kanching and Kuala Lumpur in Selangor and the Larut area of Perak. Mining typically remained only a few miles from the coast, although production at

Taiping now involved road haulage for 12 miles to the river and then ten miles down to the sea.[54]

As the Chinese pushed into Larut and the Selangor valley and tin output boomed in the late 1860s, civil strife, which had never been far from the surface in Malaya's history, broke out again as Malay chiefs fought over control of taxation on tin going down the rivers, and the Chinese clans took sides and fought their own battles over control of tin land.[55] In 1872–73, the fighting was bad enough to reduce tin output, hitting British trade through the Straits, and this finally led the British into extending their administration to the mainland in 1874.[56] Thus, the growth of the tin mining industry led to the spread of the British Empire into Malaya, a clear cut example of economic factors causing imperial expansion.

The third and most spectacular success story in the Far East down to the 1870s was Siam, principally the island of Phuket which produced 70 per cent of Siamese output in 1869–74.[57] The island, like Banka and Malaya, had been an ancient producer but, according to Falkus' figures, annual imports from Siam into the Straits averaged only 470 tons in 1849–53. However, production leaped to 4,609 tons by 1869–73, outstripping that from the Malayan mainland. Falkus' explanation for this growth is that the Bowring Treaty of 1855 freed trade between Britain and Siam. However, since trade was growing rapidly before the 1855 treaty it would seem reasonable to argue, as with free trade in Britain, that it came as a result of growth rather than being its cause. Falkus also suggests that the strong Chinese provincial governors encouraged the tin trade, and that Siam had easily worked alluvial tin and an available supply of Chinese labour. These factors, however, were all present before the 1850s, and therefore cannot explain the timing of growth. The probable cause of this was the increased price of tin in the 1850s (see Figure 2) which for the first time justified the expense of pushing inland and clearing the dense jungle. Because Phuket was a small island, of course, this could be done without the need to incur major transport costs.

III

After 1870, in the face of the burgeoning tinplate industry, the old established tin producers experienced divergent fortunes; Malaya rose to world predominance while Cornwall fell into insignificance. Cornish tin output held to a plateau of production above 9,000 tons from 1863 to 1893, but relative to the growth in world output this represented decline; having produced 40 per cent of world production in 1871, Cornwall accounted for only 11 per cent by 1893.[58] In the 1890s, moreover, with the short-run slump in prices, there was a precipitous absolute decline in Cornwall's output from 9,000 tons in 1893 to 4,300 tons in 1900, just five per cent of world output; production then held steady until a further collapse in 1920. The number of mines fell from

307 in 1873 to 23 in 1895, with a slight revival to 40 by 1914; only a handful were profitable, however, and in 1906 four mines produced 65 per cent of Cornish tin.[59] Employment fell from 26,604 in 1873 to 5,193 in 1898, although there was a slight revival again to 6,453 in 1914.[60] There was an increase in labour productivity from 0.54 tons of tin concentrate per man/year in 1873 to 1.5 tons in 1895, due to the shake-out of unproductive mines and to some extent to the introduction of new technology like the rock drill, better winding gear and ore processing plant. After 1895, however, productivity fell to 0.95 tons per man/year due to the falling quality of the ore and the increased difficulty in winning it.[61]

The decline of the Cornish tin industry was not due, as has been suggested, to any inflexibility in the cost-book system or an unwillingness or inability to set by reserves or undertake development work, nor to any lack of investment in the mines.[62] The problem in the face of the long-run increase in prices was the gradual reduction in the quality of the tin ore and the eventual economic and physical exhaustion of the reserves, as with copper before it. Costs increased as mines went deeper and the richness of the ore fell, a display, in fact, of the classic law of diminishing returns applied to the mining industry.[63] It is important to note that there was no unwillingness to sink new speculative shafts in search of new deposits. The mighty Dolcoath mine raised £350,000 without difficulty in 1895 to sink a new shaft, but it only served to postpone the end.[64] West Kitty sank a new shaft in 1900 after old lodes had pinched out.[65] Indeed, in the speculative boom of 1905–7, 49 companies were formed to seek new tin in Cornwall or to reopen old workings, but the arrest in the decline, prompted by the record price of tin, was only temporary.[66] Nor was the much maligned entrepreneur the problem; East Pool, whose operations were said to have been remarkably efficient and well managed, spent heavily in the 1920s, but failed to find new ore.[67] The failure of reserves was inexorable, and it was this which put the Cornish industry virtually out of business despite the increase in tin prices. For example, Wheal Agar made good profits in 1877 when tin was £40 a ton and its ore yielded 120lbs. of tin per ton, but in 1895, when tin was up to £49 a ton, it could only break even, because the quality of its ore had fallen to 57lbs. per ton.[68]

Significantly, the geological problems of the Cornish tin mines transformed the institutional organisation of the industry. As the expense and risk of searching for new reserves increased the cost-book system became untenable so that by 1900 it had almost entirely been replaced by limited liability joint-stock companies.[69] Furthermore, the increased capital investment required in new shafts and in new equipment like rock drills led to the need for greater control over the labour process so that the tribute system also disappeared to be replaced by more straightforward wage labour.[70]

Malaya's fortunes in the last quarter of the nineteenth century could not be a greater contrast to those of Cornwall. In 1875, Malaya produced some 8,600 tons of tin, still less than Cornwall, or 20 per cent of world production. By 1904, at the peak of its dominance, Malaya was the world's leading producer with 52,600 tons, a full 54 per cent of total world output.[71] Again, this achievement was on the basis of little technological change; sometime after 1850 the Chinese began to use wooden sluice boxes to wash the ore in place of the simple ditches, while from 1877 steam pumps gradually replaced the water-powered pumps, but the huge increase in output was achieved by simply importing more and more Chinese labour.[72] From 40,000 Chinese in Perak in 1870, there were 95,277 in 1891 and 150,000 by 1901.[73] In the peak year of 1907, there were 231,000 workers employed in tin mining in Malaya, 96 per cent of which were Chinese; 90 per cent of the mining was still by traditional open-cast methods where labour represented 80 per cent of total costs.[74]

As the long-run price of tin increased in this period, a succession of areas in Malaya were exploited which were more and more inaccessible, and where costs were increasingly high.[75] The usual pattern was that tinfields reached a peak of output, followed by a reduction in the quality of their reserves, and eventually a decline in production. Output in Larut peaked in 1884 at 7,559 tons, 74 per cent of Perak's and 42 per cent of Malaya's output.[76] Within 10 years, however, Larut's output had fallen by almost half, and the centre of production in Perak moved from the late 1880s to Kinta. The development of Kinta has been attributed to the discovery of particularly rich reserves, but the Malays had been working small quantities of ore there for many years; the reason why the tinfield had not been exploited in bulk before was its remoteness.[77] In 1882 it was still necessary to carry tin by elephant and then to pole a boat 50 miles or so down the Perak river (see Map 1). To get from Gopeng in Kinta to Penang was said to cost five times more than from Taiping in Larut.[78] It was the steady rise in the price of tin, accompanied by the devaluation of the Straits dollar, which made Kinta profitable to exploit and led to a rapid growth in output in the late 1880s and early 1890s. The building of railways followed this development, and was financed out of the duties on tin exports. The first railway in Malaya was an eight-mile stretch from Taiping to Port Weld in 1885, while a 60-mile line from Ipoh in Kinta to the coast at Telok Anson (see Map 1) was only completed in 1895.[79] Kinta went from producing 2,034 tons in 1884 (a quarter of Larut's total) to an output of 19,347 tons in 1895, 80 per cent of Perak's total, 38 per cent of Malaya's output and, indeed, 21 per cent of world production.[80]

Selangor also experienced spectacular growth, and in 1886 a 22 mile rail link was built from Kuala Lumpur to Klang on the coast, which greatly facilitated further development.[81] Output increased from 5,897 tons in 1886 to 22,341 tons in 1894, almost equal to that of Perak. After that, and despite a revival of prices in the late 1890s, output fell as the quality of the reserves declined.[82] Negri Sembilan was always a less important state and the best reserves had been worked out by 1870.

However, higher prices did stimulate output there, which peaked at 5,089 tons, a tenth of Malayan production, in 1903, after which it dropped away as reserves ran out.[83] The only lode mining in Malaya was in Pahang. Some underground tin had been worked 50 miles inland in the upper reaches of the Kuantan River (see Map 1) for some time by the Chinese, but in 1887, stimulated by an all-time peak in tin prices, a British company – Pahang Consolidated – was formed to apply western, largely Cornish, technology to the hard-rock.[84] There was a speculative boom of similar companies but all failed except the pioneer concern, which, as our model would predict, was itself on the margin of profitability and did not pay a dividend until 1896. By 1913, however, it was the second largest lode mine in the world.[85] Again, the need to protect this capital investment in Pahang led to the further extension of British rule into the interior of Malaya in 1888.[86]

The Pahang mine was the first successful application of British capital in Malayan mining. Previous British attempts to enter open-cast mining failed because of an inability to control the supply of labour at a time when labour intensive techniques were still the most viable. As the quality of the ground fell, however, hand labour lost its cost-effectiveness in comparison with the application of capital embodied in technology able to handle large amounts of low grade ore. The first successful use of western capital to open-cast mining came with the formation of the Gopeng Tin Mining Co. in 1892 by a group of Cornish capitalists led by F.D. Osbourne. This used natural water pressure through a monitor to break up the ore and to elevate it out of the mine. Borrowed from California, 'hydraulicing' needed relatively large amounts of capital (£14,000 for Gopeng) but it could work ground profitably with only 1.25 lbs of tin per cubic yard, perhaps only a third as rich as that which was profitable by hand.[87] When steam pumps replaced natural water pressure the basically similar method had much wider applicability. Called 'gravel-pumping', the idea was first introduced into Malaya in Perak in 1906 and, cheap enough to be taken up by the Chinese, in little over a decade it had almost entirely superseded the old hand methods.[88]

A further increase in capital intensity came with the introduction of the bucket dredge in 1912. Again it was not a new technology; it had much in common with the old river dredges, and steam powered dredges had been available since at least the 1880s, but it took the highest tin prices in history to justify the large amounts of capital involved.[89] In round figures, in 1880 a traditional Chinese open-cast mine with 600 labourers cost £640 to set up; 43 per cent of this was the cost of importing the labour.[90] However, hand work in the 1890s was only viable on land yielding 3–4 lbs. of tin concentrate per cubic yard.[91] The gravel-pump cost £1,600 to set up but was profitable on ground of only 1.4 lbs. per cubic yard in the 1920s.[92] A dredging operation, on the other hand, cost perhaps £100,000, but it could do the work of 2,000 labourers, had half the operating cost of the gravel-pump, and could be profitable in swampy low-lying ground yielding only 0.6–0.8 lbs. per cubic yard at the prices prevailing just prior to the First World War.[93] Dredges could even rework land previously mined by hand methods.

There were 12 dredges at work in Malaya in 1915, and 20 by 1920; and because their capital cost was outside the reach of Chinese resources there was an increase in British control of the Malayan tin industry – from 10 per cent of production in 1900 to 36 per cent and rising by 1920.[94] Horse-power applied in Malayan mining increased from 7,768 h.p. in 1904 to 64,400 h.p. in 1920, reducing the labour force in tin mines from 186,337 in 1904 to 90,000 by 1920.[95] By 1929, 41 per cent of Malayan tin output was by gravel-pump, 39 per cent by dredge, 8 per cent by hydraulicing, 5 per cent by lode mining and only 4 per cent by the old hand methods.[96]

The East Indies made steady progress in this period, although, as Table 2 shows, it lost in relative importance. Banka remained the chief source of supply although the period saw the growth in importance of Billiton. Again, the bringing into production of the island adjacent to Banka (see Map 1) is usually explained in terms of the discovery of tin by Dutch prospectors in 1851.[97] However, Billiton's tin was known about at least as early as 1812; what probably held back exploitation was that the island was more remote than Banka and to exploit the tin required the provision of an entire infrastructure and the importation of all necessities.[98] A private company was granted a monopoly of the tin trade for 40 years in 1852 but it was unsuccessful until, in 1860, it was taken over by Billiton Maatschappij, in which the Dutch government took a ⅝th share in 1892.[99] In 1887, again at a peak in tin prices, the Singkep Tin Co. was formed to mine tin on the small island to the north of Banka, but it proved unprofitable and produced only a few hundred tons by 1920.[100]

As they were small islands, trade from Banka, Billiton and Singkep lent itself to control by monopolies, either government or privately-owned, but, of course, production was still undertaken by the Chinese. Mechanisation lagged behind Malaya somewhat; not until 1910 did the first gravel-pump come to Billiton. The dredge was first used in that island in 1920, and in Banka in 1926. In 1925, 79 per cent of the region's tin output was mined by gravel-pump, while 21 per cent was still mined by hand.[101] Relative output between the islands is not known accurately until 1900; in that year, Banka exported 12,631 tons, 68 per cent of the East Indies total and Billiton 5,882 tons, or 32 per cent.[102] In 1921–22, Banka produced 14,883 tons, or 54 per cent, Billiton had doubled output to 11,805, or 43 per cent of the total, while Singkep's 667 tons were a mere two per cent of production in the East Indies.[103]

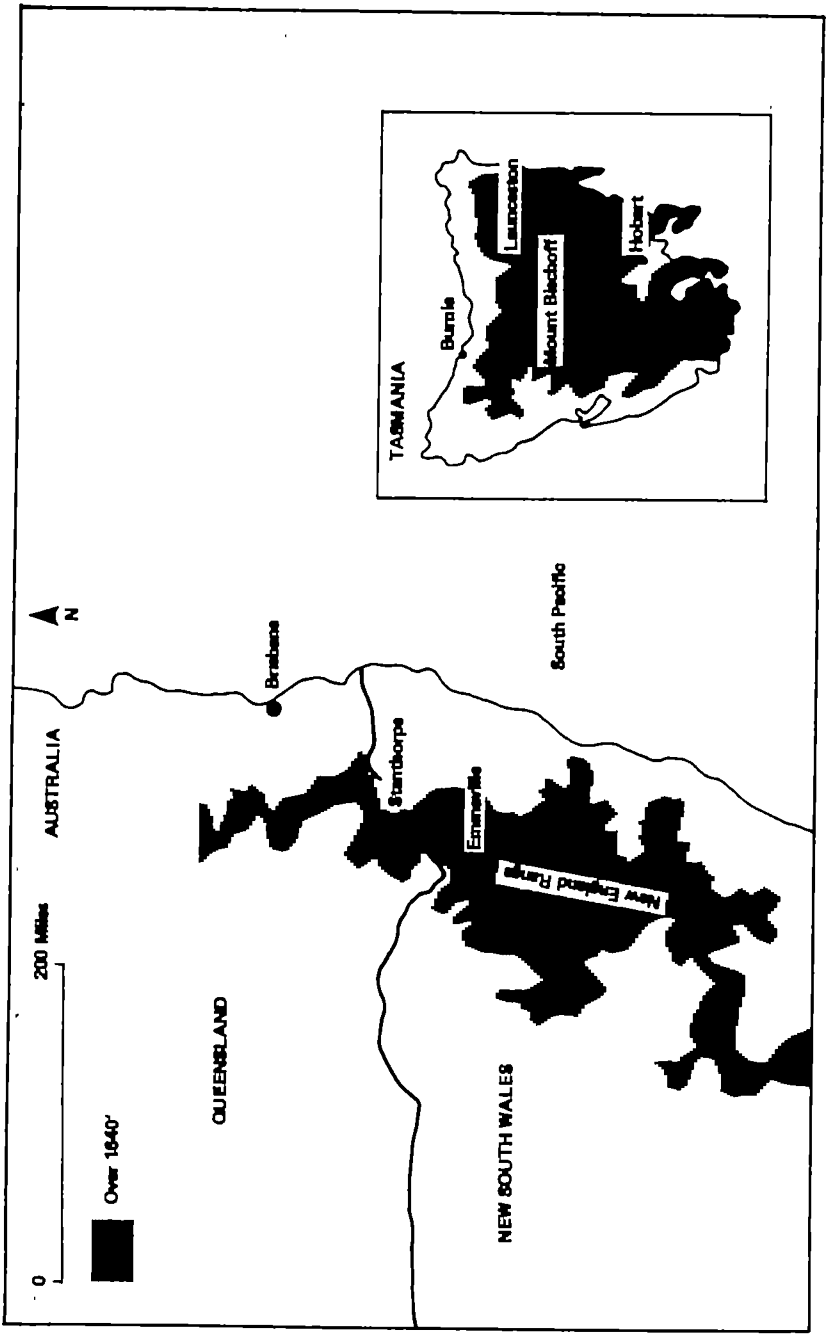
Finally, the least successful of the established producers was Siam, where output peaked at 7,214 tons in 1877, 20 per cent of the world total, but then fell back to a plateau of around 4,000 tons until 1911, only four per cent of world production.[104] The main reason for this poor performance was the declining quality of the most easily accessible deposits and the consequent increase in costs.[105] A partial recovery only took place after the all-time high tin prices of the first decade of the twentieth century tempted Australian capitalists into introducing the first bucket dredge in South East Asia via the Tongkah Harbour Co., formed in 1906. The resurgence in Siamese output from 4,312 tons in 1908 to 6,748 tons in 1914 was largely due to the use of dredges, which accounted for 27 per cent of output by the latter year.[106]

IV

In the later nineteenth and early twentieth centuries, a number of relatively new tin producing countries were drawn into the world market. The first of these was Australia, which went in an extraordinary fashion from producing 'a few bags' in the 1850s and 1860s, and 200 tons in 1870, to producing 11,300 tons in 1875, thus becoming the world's largest producer with 27 per cent of the world market.[107] Again, stories of fortuitous discovery are usually used to explain this phenomenon. The tinfield in the New England Range of mountains on the New South Wales/Queensland border (see Map 3) was said to have been discovered at Emmaville by a shepherd in 1871, while a seemingly unrelated find was made at Stanthorpe in 1872. The other major discovery, on Mount Bischoff, Tasmania, in 1871 was apparently a windfall for one 'Philosopher' Smith, who was out in search of gold.[108] There is, however, some evidence that tin had been found and ignored in all these locations in the 1840s and 1850s and, clearly, their eventual 'discovery' in the early 1870s is suggestively close together in time.[109] It seems likely that the presence of tin had been neglected until prices reached record levels in 1871 because of the difficulties with transport. The tinfield high in the New England Range was well over a hundred miles from the coast, while Mount Bischoff was 48 miles from the sea through 'almost impenetrable' woodland.[110] Moreover, even though Mount Bischoff was 'the greatest lode of tin known to man', it was still on the margin of profitability, and it was two years before a company, with a capital of £100,000, could be raised to exploit it. The tin had to be carried off the mountain by pack horses until a horse-drawn railway was built in 1878, the first year the company paid a dividend.[111] Once the transport system was in place and the price of tin revived in the 1880s, however, huge profits were made, as they were in the New England Range where Australians and Chinese mined the alluvial tin by hand.[112]

Australian output reached a peak of 13,000 tons in 1881 – 26 per cent of world production – having greatly depressed the world price. But, with the depletion of the richest reserves, as Table 2 shows, output began to decline, and was especially rapidly, as in Cornwall, in the 1890s. Again, like Cornwall, there was a brief, if dramatic, revival with the high prices of the first decade of the twentieth century but the decline soon resumed.[113] Tasmania remained one of the main producers, supplying 40 per cent of Australia's tin in 1907; as the lode on

MAP 3
AUSTRALIA

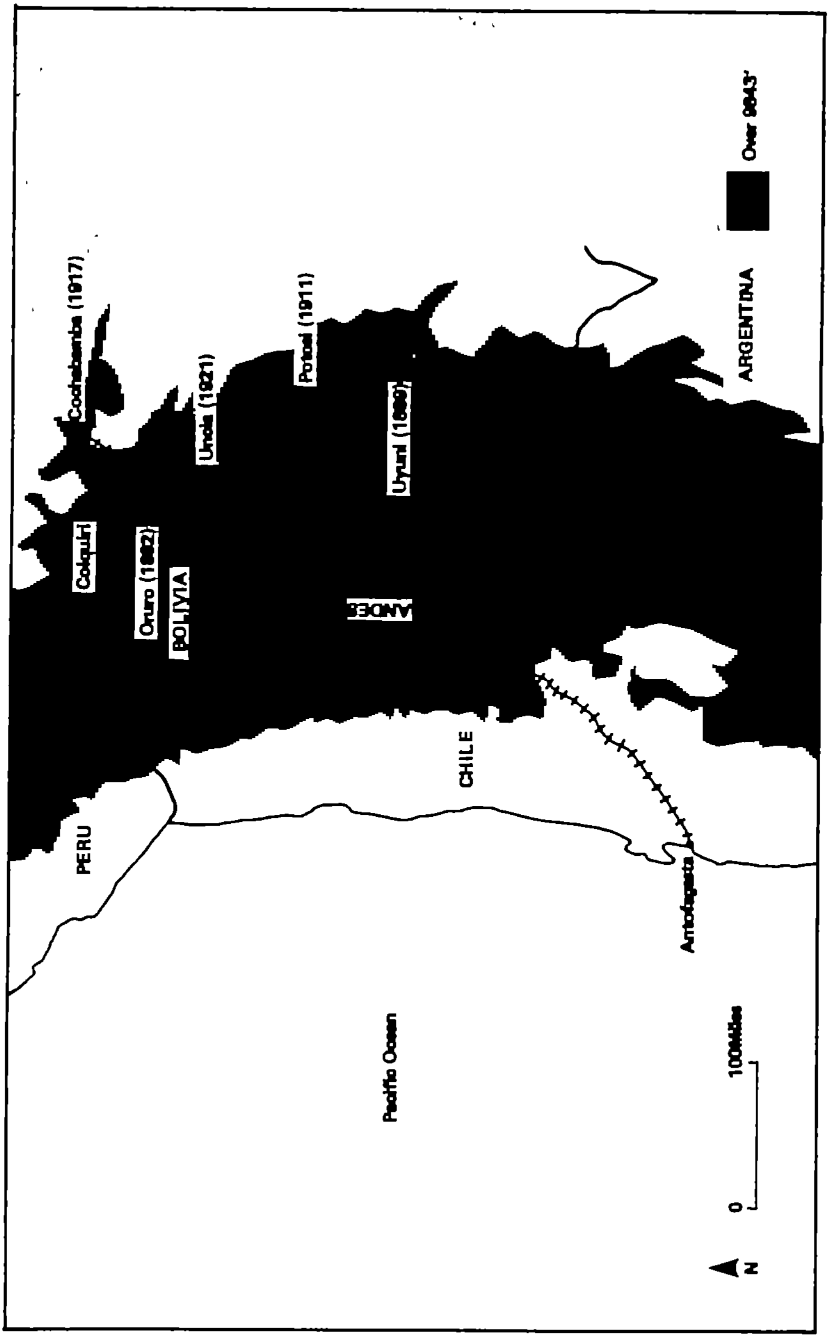


Mount Bischoff gave out emphasis shifted to alluvial mining in the east, which produced 80 per cent of the island's tin by 1908.[114] In 1907, 52 per cent of tin mined in Australia came from Queensland, where the centre had shifted north to Herberton.[115] As the richness of the ores dwindled the Australian fields were the first to mechanise using the gravel-pump, while the first bucket dredge was in operation in Tasmania in 1907.[116]

The next country to become a major world tin producer was Bolivia. The story is often told in terms of the courage, perseverance and, above all, luck of pioneers like Patiño, who struck a fabulously wealthy lode at his La Salvadora mine in 1900.[117] In fact, the evidence again fits the more prosaic model of ever higher tin prices bringing areas with higher costs into viability. Tin had been mined in Bolivia since Spanish colonial times and a trickle had entered world trade from small-scale mines from the 1860s, but transport difficulties over the rugged terrain of the Andes kept this to a minimum.[118] Output increased as a railway from the Chilean port of Antofagasta reached Uyuni in 1889 (See Map 4) and Oruro in 1892 – 600 miles from the coast and 13,000 feet up in the Altiplano.[119] Even this still left a 60 mile stretch from the railhead to the site of Patiño's mine near Uncia. This site had been worked for silver for over 300 years, while the tin had been rejected as worthless.[120] The high prices of 1872 led to an attempt to exploit the tin, although it failed due to the costs of transportation; but, with the still higher prices in 1900, it was said that 'those ores which had been rejected as dross acquired economic value almost overnight'.[121] Patiño's 'discovery' was followed by others, one on the other side of the same mountain at Llallagua in 1903 was exploited with Chilean capital. Most of these new mines were within a 60 mile radius of Oruro, although there were others, for example, at Colquiri and Potosi (see Map 4).[122] As a result of these developments, as Table 2 indicates, Bolivia, which produced only 1,700 tons of tin in 1890, by 1900 produced 11 per cent of the world market, and by 1910, 19.5 per cent, second in importance only to Malaya.

The image of the larger Bolivian mines is that they were fabulously wealthy. In 1920, the *Mining Magazine* joked that 'a grocer with a tin opener and a corkscrew could make profits' there.[123] Indeed, the initial bonanza that Patiño struck at La Salvadora was said to be 47 per cent pure tin, while Llallagua was estimated as 12–15 per cent fine at a time when Cornwall was lucky to get 1.5 per cent.[124] And as prices continued their upward course profits appeared extraordinarily large – Patiño, for example, was said to have paid average dividends of 190 per cent between 1918 and 1924 on a capital of £425,000.[125] These profits – which were probably exaggerated – were not in fact entirely due to the richness of the ore, but, as our model would predict, depended the increase in the price of tin. As one contemporary observer put it: 'tin which barely paid the cost of production when tin prices were £60–70 a ton becomes highly profitable when prices reach £192, as they did in 1911–12'.[126] Between 1924 and 1928, when prices averaged $1,270 a

MAP 4
BOLIVIA



ton, Patiño's profits averaged $6.9 million a year; in the three years 1930–32, when prices averaged only $574 a ton, his profits were wiped out.[127] Clearly, since the average price of tin was $401 in the 1890s, Patiño's mines, as rich as they were, would not have been profitable prior to 1900. Of course, the quality of ore had declined in the meantime (at Llallagua, from 12 to 15 per cent pure in 1908 to five to nine per cent in the 1920s) but this would have been more than offset by the fall in transport costs in the period.[128] The 60-mile journey from the Patiño mines to the railhead was originally a five day trek with tin carried on the backs of mules or llamas; this was successively reduced by the building of a railway completed in 1921 at a cost of £1 million, but even then it only reached the base of the mountain.[129] Bolivia had other problems: its concentrate was only 60 per cent pure, and it was of lower quality than the alluvial tins, while after the rail journey to the coast it faced the long ocean voyage to be smelted in Britain.

Undoubtedly, Bolivian tin made a number of men very wealthy, and again the geology determined the structure of the industry since the small number of very productive mines led to concentration of ownership. Pre-eminent, of course, was Patiño, whose policy of buying out neighbouring mines culminated in 1924 with the purchase of Llallagua which gave him control of half the tin output of Bolivia and 11 per cent of world production.[130] The 1920s saw the rise of the Hochschild family, which, together with Patiño and the long-established Aramayo family, meant that the 'big three' controlled three-quarters of Bolivia's tin by 1930 and consequently wielded huge political influence in a country whose trade was almost totally reliant on its tin exports.[131]

The final tin producer to enter the world market in this period – Nigeria – repeats the pattern of development that has by now become clear. Nigeria also had a history of indigenous tin production on the Jos plateau going back at least to the sixteenth century.[132] However, although it was said to have played a vital role in the Nigerian economy in the nineteenth century, tin production was probably never above a few hundred tons.[133] The tin was smelted into straws and ultimately made into ornaments or jewellery or used for tinning brass bowls, and it was traded as far as the Nile, Tripoli and Ashanti.[134] Most writers date British knowledge of the provenance of this tin to 1884 or 1885, which predates its commercial exploitation by at least 20 years, and again one of the reasons for this was the formidable transport problem.[135]

Prior to 1912, the tin concentrate from the Jos was manhandled by thousands of porters in 65 lb. bags 200 miles to Loko on the Benue (see Map 5). From there it went by steamer or canoe the 110 miles to Lokoja on the Benue/Niger confluence, then 340 miles down the Niger to the sea and thence to Liverpool to be smelted. Total transport costs in 1909 were estimated at around £35 a ton, 26 per cent of the London price of tin.[136] In 1912, a light railway was completed linking the tinfield with the Kano–Lagos railway but even then rail charges were £11–£12 a ton.[137] In 1914, the break-even price for Nigerian tin was around £124 a ton, which explains the lack of enthusiasm by investors in the region in the 1890s, when tin prices averaged £88 a ton. Not surprisingly though, interest was stimulated in 1906, when tin reached £181 a ton and there was a speculative boom in Nigerian tin companies when prices hit £210 a ton in 1912.[138] Tangible increases in production, however, were less spectacular and output rose from 240 tons in 1906, to 1,000 tons in 1911, and 5,300 tons or four per cent of world production in 1920.[139]

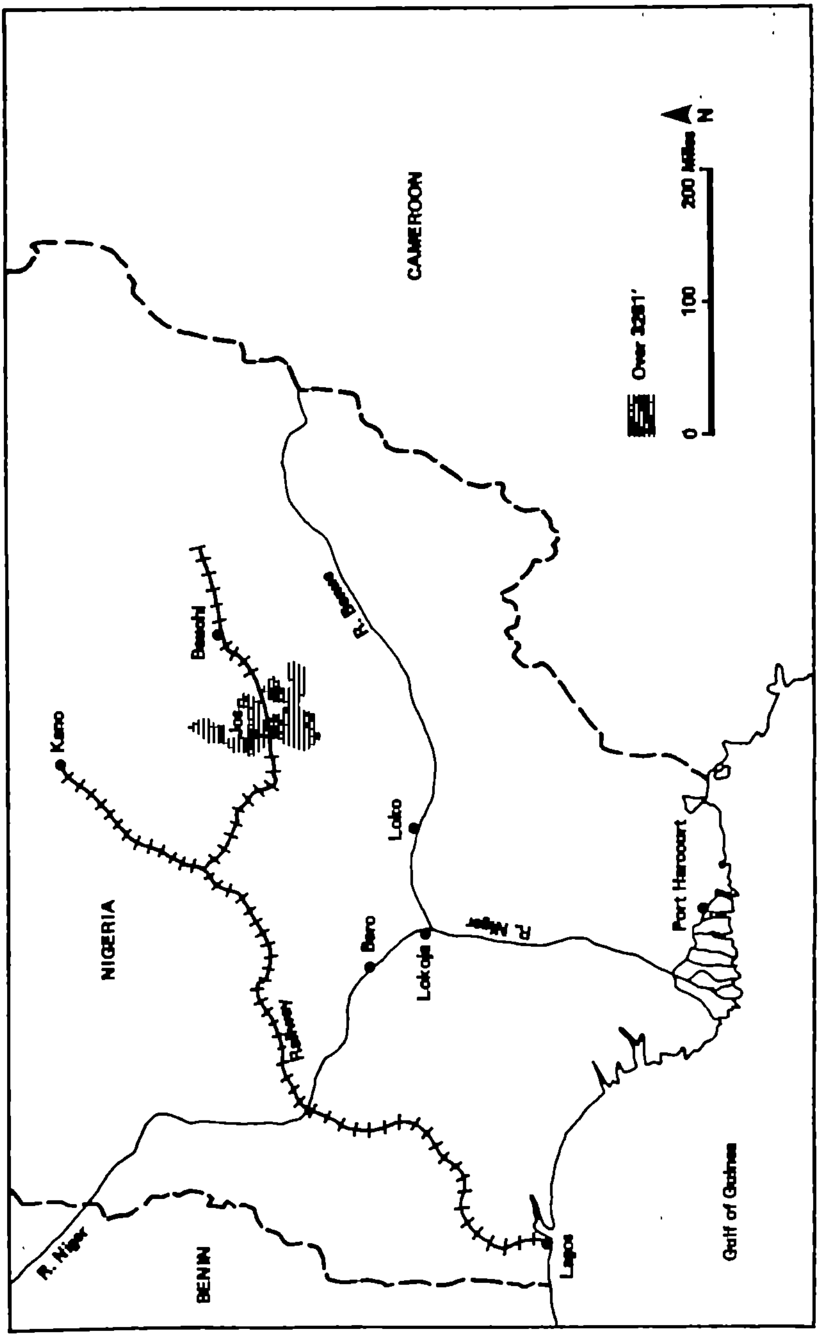
The successful exploitation of Nigerian tin required military intervention to overcome the hostility of the local population and this was undertaken by the Royal Niger Co. on behalf of the British government between 1902 and 1910.[140] So, as in Malaya, the tin industry was responsible for a further expansion of the British Empire. There was never any problem finding the widely scattered alluvial ore but there was some difficulty in recruiting and keeping sufficient local labour and of maintaining an adequate water supply.[141] The quality of the ore was high enough for it to be won by pick and shovel and washed in a pan and as a result Nigeria was relatively slow to adopt machinery although there was said to be a small dredge there in 1912 and gravel-pumps by 1920.[142]

V

The purpose of this article has been to demonstrate that the history of the discovery and development of at least one mineral – tin – can be satisfactorily explained in terms of economic variables without reference to the effect of chance finds. It does not, however, support Blainey's thesis that discovery tends to come in economic recessions but rather that the development of tin mining conforms closely to a model which sees the driving force as an increase in the demand for tin for industrial uses. This increased demand, which was especially rapid after 1860, could not be met entirely by existing producers therefore price was forced up and areas with successively higher costs were brought into production. The tin deposits in areas like the Kinta region of Malaya, the Andes of Bolivia or the remote Jos plateau in Nigeria had been known about prior to their exploitation but they had not been commercially viable until prices rose. The higher prices also made profitable new methods of production and the substitution of capital for labour embodied, for example, in the gravel-pump and the dredge.

There were also a number of exogenous factors. Exchange rates played a part; autonomous changes in mining technology tended to reduce costs but their effect was found to be relatively weak. Far more important was the long-run improvement in ocean-going and overland transport. The former helped create a unified world market for tin in the first half of the nineteenth century, and falling freight costs throughout the period meant that the London price of tin continually undervalued the prices at the point of production and therefore the profitability of tin mining. Internally, the construction of railways (and

MAP 5
NIGERIA



also roads) usually followed the development of a tinfield, but once the heavy capital expenditure had been made sizable reductions in transport costs could result. This meant that output increased even during subsequent periods of falling prices.

The importance of the haphazard role of geology and geography was emphasised, not because they made the tin difficult to find but because they were the main determinants of the costs of production and therefore of the order in which the tinfields were exploited. They also determined why some tinfields and countries rose in importance, like Malaya in the second half of the nineteenth century, while others, like Cornwall, declined. Finally, the sub-text of the article was the way in which on the basis of the economics of tin mining could be built the superstructure of the institutional organisation of the industry. Politics, both national and imperial, also seemed to dance to the tune played by the price mechanism which mediated geology and geography with the demands of the growing industrial economies.

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NOTES

I would like to thank Dr Gill Burke, Dr Roger Burt and Prof. Alexander Dow for their comments on an earlier draft of this paper.

1. G. Blainey, 'A Theory of Mineral Discovery: Australia in the Nineteenth Century', *Economic History Review*, 2nd series, Vol. XXIII (1970), pp.298–313.
2. M.J. Morrissey and R. Burt, 'A Theory of Mineral Discovery: A Note', *Economic History Review*, 2nd series, Vol. XXVI (1973), pp.497–505.
3. G. Blainey, 'A Rejoinder', ibid., pp.506–9.
4. M. Davies, 'Blainey Revisited: Mineral Discovery and the Business Cycle in South Australia', *Australian Economic History Review*, Vol. XXV, No. 2 (1985), pp.112–28.
5. Ibid., p.113.
6. Ibid., Tables 2 and 4.
7. Ibid., p.125.
8. Blainey, 'Theory of Mineral Discovery', p.299.
9. Ibid., p.311.
10. Morrissey and Burt, 'Note', p.497.
11. Davies too showed no interest in the price of metal discovered in South Australia.
12. Morrissey and Burt, 'Note', pp.497–8.
13. D.B. Brooks (ed.), *Resource Economics: Selected Works of Orris C. Herfindahl* (Baltimore, 1974), p.xxi.
14. See, O.C. Herfindahl, *Copper Costs and Prices, 1870–1957* (Baltimore, 1959).
15. O.C. Herfindahl, 'Some Fundamentals of Mineral Economics', *Land Economics* (May 1955), pp.131–8.
16. C.J. Schmitz, *World Non-Ferrous Metal Production and Prices, 1700–1976* (1979), pp.371–2.
17. The estimates are by Newbold for 1835, given in Wong Lin Ken, *The Malayan Tin Industry to 1914* (Tucson, 1965), p.20, and by Carne in R. Burt (ed.), *Cornish Mining, Essays on the Organisation of Cornish Mines and the Cornish Mining Economy* (1969), p.92. The latter would seem to be reliable since he estimates the

output for Banka (2,700 tons) in line with the ITC figures (2,900). Siamese estimates from M. Falkus, 'Aspects of the Development of Tin Output in Siam and Malaya, 1870–1914' (unpublished paper presented to the International Mining History Conference, the University of Melbourne, 1985), p.3. Siam, rather than the present-day name of Thailand, is used throughout this article.

18. Wong Lin Ken, 'The Malayan Tin Industry to 1914' (unpublished Ph.D. thesis, University of London, 1959), pp.32 and 35.
19. Ibid., pp.20 and 40.
20. US Department of the Interior, *Minerals Yearbook* (1934), p.454.
21. W.E. Minchinton, *The British Tinplate Industry* (1957), p.56; Yip Yat Hoong, *The Development of the Tin Mining Industry of Malaya* (Kuala Lumpur, 1969), p.6.
22. Minchinton, *British Tinplate*, p.58; manufacturers were successful in reducing the amount of tin that went into tinplate throughout the nineteenth century, which explains why growth in tinplate production was faster than for tin itself.
23. W.L. Baldwin, *The World Tin Market: Political Pricing and Economic Competition* (Durham, NC, 1983), p.96.
24. Only scattered and not especially reliable cost comparisons for the nineteenth century are available. For example, in 1839 production costs in Lukut, Malaya were said to be £23 a ton and in Cornwall £64 a ton. R.N. Jackson, *Immigrant Labour and the Development of Malaya, 1786–1920* (Kuala Lumpur, 1961), p.32. However, for evidence of the wide disparities in unit costs between regions and production methods in the present era see Baldwin, *World Tin Market*, p.186.
25. Ibid., p.113.
26. R.W. Jastram, *Silver: The Restless Metal* (New York, 1981), pp.201–2; Wong, *Malayan Tin Industry* (1965), p.233. I am grateful to Dr John Latham of the University of Wales, Swansea, for the $SS/£ exchange rate in this period.
27. W.R. Jones, *Tinfields of the World* (1925), p.10.
28. Freight rates quoted in A.J. Latham, *The International Economy and the Underdeveloped World, 1865–1914* (1978), p.193.
29. D. North, 'Ocean Freight Rates and Economic Development 1750–1914', *Journal of Economic History*, Vol. XVIII No. 4 (1958), p.549; Wong, *Malayan Tin Industry* (1965), p.3.
30. This factor was first noted by U. Puey, 'The Economics of Tin Control' (unpublished Ph.D. thesis, University of London, 1949).
31. J. Hatcher and T.C. Barker, *A History of British Pewter* (1974), p.291; J. Hatcher, *English Tin Production and Trade Before 1550* (1973); J.C. Jackson, 'Mining in 18th-Century Bangka: The Pre-European Exploitation of a "Tin Island"', *Pacific Viewpoint*, Vol. 10, No. 2 (1969), p.40.
32. Burt, *Cornish Mining* (1969), p.87; Wong, *Malayan Tin Industry* (1965), p.3.
33. Wong, *Malayan Tin Industry* (1965), p.3.
34. Ibid., pp.20 and 35; Falkus, 'Tin Output in Siam', p.7.
35. Wong, *Malayan Tin Industry* (1965), p.8.
36. J. Rowe, *Cornwall in the Age of the Industrial Revolution* (Liverpool, 1953), p.204; Falkus, 'Tin Output in Siam', p.8.
37. Wong, *thesis* (1959), p.32; Wong, *Malayan Tin Industry* (1965), p.211.
38. Barton suggests that many deep tin mines would never have come into being or been profitable without their previous careers as copper mines, but the extent that this was so is difficult to judge. Many tin mines were sunk without any previous history of copper mining and made profits in the good years. D.B. Barton, *A History of Tin Mining and Smelting in Cornwall* (Truro, 1967), p.12; T.A. Morrison, *Cornwall's Central Mines: The Northern District, 1810–1895* (Penzance, 1980), pp.21 and 375; T.R. Harris, *Dolcoath: Queen of Cornish Mines* (Penzance, 1974), p.66.
39. This market share is using the revised figures. Using the ITC estimates, which include the probably inflated China and Malaya/Siam totals, Cornwall represented about a third of world output, 1800–70.

40. Rowe, *Cornwall in the Age of the Industrial Revolution*, p.24.
41. Barton, *Tin Mining*, pp.93 and 169; J.B. Richardson, *Metal Mining* (1974), p.59; G.M. Burke, 'The Cornish Miner and the Cornish Mining Industry, 1870–1921', (unpublished Ph.D. thesis, Birkbeck College, University of London, 1981), pp.465–66. Output tended to be concentrated; in 1855, for example, the 17 largest mines produced 52 per cent of output, R. Burt, P. Waite and R. Burnley, *Cornish Mines: Metalliferous and Associated Minerals 1845–1913* (Exeter, 1987), p.xiii.
42. Jackson, 'Mining in 18th-Century Bangka', p.32.
43. Yip, *Tin Mining Industry of Malaya*, p.57; Wong, *thesis* (1959), pp.51 and 62; J.T. Thoburn, *Primary Commodity Exports and Economic Development* (1977), p.58; A. Smith, 'A History of Tin Mining', *Tin International* (May 1981), p.170.
44. For discussion of the myth see S.H. Alatas, *The Myth of the Lazy Native* (1977). For its persistence in the context of the Malayan tin industry see R.S.G. Stokes, *Mines and Minerals of the British Empire* (1908), p.57: 'the indolent but lovable Malay has lapsed into a state of quiet, contented and proud retirement'; L.C.A. Knowles, *The Economic Development of the British Overseas Empire* (1924), p.477: 'the Malay is constitutionally disinclined to work'; A. Smith, 'A History of Tin Mining', *Tin International* (May 1981), p.170: 'They (the Malays) had neither the commercial shrewdness nor the aptitude for hard and sustained work so essential for the success of any business undertaking'. For its application to Siam see Falkus, 'Tin Output in Siam', p.3: 'The Siamese themselves had evolved a way of life which avoided the necessity for continuous hard work'.
45. Put at 50 per cent a year in some accounts. A. Smith, 'A History of Tin Mining', *Tin International* (Feb. 1982), p.48.
46. Ibid., p.35; Yip, *Tin Mining Industry of Malaya*, pp.58 and 181.
47. Yip, *Tin Mining Industry of Malaya*, pp.85 and 87; Jackson, 'Mining in 18th-Century Bangka', p.44.
48. Schmitz, *World Non-Ferrous Metal Production*, p.161; Jackson, 'Mining in 18th-Century Bangka', pp.34–35. Jackson seems to exaggerate the scale of mining in this period.
49. A.L. Ter Braake, *Mining in the Netherlands East Indies* (1944), p.37.
50. Wong, *Malayan Tin Industry* (1959), p.35.
51. B.W. Andaya, *Perak, the Abode of Grace: A Study of an Eighteenth-Century Malay State* (Kuala Lumpur, 1979), pp.112 and 337; Yip, *Tin Mining Industry of Malaya*, p.55.
52. Wong, *thesis* (1959), p.32.
53. Ibid., p.50; Jackson, *Immigrant Labour*, p.32.
54. Wong, *thesis* (1959), pp.58 and 62.
55. Ibid., p.23.
56. Yip, *Tin Mining Industry of Malaya*, p.58; for a different if unconvincing interpretation of British intervention in Malaya see M. Caldwell, 'The British "Forward Movement", 1874–1914' in M. Amin and M. Caldwell (eds.), *Malaya: The Making of a Neo-Colony* (1977), p.13.
57. Falkus, 'Tin Output in Siam', p.19.
58. Schmitz, *World Non-Ferrous Metal Production*, pp.164–8.
59. Burke, thesis, pp.113 and 465.
60. Ibid., p.466.
61. Ibid., p.468.
62. Ibid., pp.112 and 115; C. Noall, *Levant: The Mine Beneath the Sea* (Truro, 1970), p.122; G. Burke and P. Richardson, 'The Decline and Fall of the Cost-Book System in the Cornish Mining Industry, 1895–1914', *Business History*, Vol. 23 (1981), pp.4–18; R. Burt and N. Kudo, 'The Adaptability of the Cornish Cost-Book System', *Business History*, Vol. 25 (1983), pp.30–41; Burt, *et al.*, *Cornish Mines*, p.xxiv.
63. For example, Wheal Agar was 90 fathoms deep in 1863 and 270 fathoms in 1890, and it produced 86 lbs. of tin per ton of ore in 1885 but only 57 lbs. per ton in 1895; East Pool produced 80 lbs. per ton in 1884 but 24 lbs. in 1896, Morrison, *Cornwall's*

Central Mines, pp.120, 132, 135 and 157; Dolcoath was 340 fathoms deep in 1869 and 500 fathoms in 1910, and produced 80 lbs. in 1895 and 25 lbs. in 1918, Harris, *Dolcoath*, pp.55, 84 and 91, and Barton, *History of Tin Mining*, pp.230 and 249; Levant went from 59 lbs. in 1894 to 34 lbs. in 1916 and from 254 fathoms deep in 1865 to 350 fathoms in 1905 and from 100–120 fathoms seaward in 1843 to a mile under the sea when the mine closed in 1930, Noall, *Levant*, pp.71 and 75.

64. Harris, *Dolcoath*, pp.71, 75.
65. Barton, *History of Tin Mining*, p.231.
66. Burke, thesis, p.161.
67. Morrison, *Cornwall's Central Mines*, pp.21 and 157.
68. Ibid., p.135.
69. Ibid., p.1; Burke and Richardson, 'CostBook System', p.4. Dolcoath, for example, changed from cost-book to joint-stock in order to raise money to sink its new shaft in 1895, Harris, *Dolcoath*, p.71.
70. Burke, thesis, p.137.
71. Schmitz, *World Non-Ferrous Metal Production*, pp.164–68.
72. Wong, *Malayan Tin Industry* (1965), p.50; Yip, *Tin Mining Industry of Malaya*, p.85.
73. Ibid., p.58; Jackson, *Immigrant Labour*, p.37; Chai Hon-Chan, *The Development of British Malaya, 1896–1909* (1967), p.126.
74. Yip, *Tin Mining Industry of Malaya*, pp.69, 82, 86, 138 and 348.
75. In Lukut in 1839 tin production costs were said to be £23 per ton; in Larut in 1880 they were £59 per ton. Wong, *Malayan Tin Industry* (1965), p.65.
76. Yip, *Tin Mining Industry of Malaya*, Table I–1.
77. Wong, *Malayan Tin Industry* (1965), p.87.
78. Ibid., p.88.
79. Chai, *British Malaya*, pp.20 and 181.
80. Wong, *Malayan Tin Industry* (1965), p.90.
81. Chai, *British Malaya*, p.20.
82. Wong, *Malayan Tin Industry* (1965), p.275.
83. Ibid., pp.109 and 249.
84. Ibid., p.125; Wong, *Malayan Tin Industry* (1959), p.403.
85. Wong, *Malayan Tin Industry* (1965), p.169; Wong, *Malayan Tin Industry* (1959), p.441.
86. Wong, *Malayan Tin Industry* (1959), p.404.
87. Wong, *Malayan Tin Industry* (1965), p.151; Jones, *Tinfields of the World*, pp.177–79.
88. Yip, *Tin Mining Industry of Malaya*, p.211.
89. Wong, *Malayan Tin Industry* (1965), p.202.
90. Ibid., p.63.
91. Yip, *Tin Mining Industry of Malaya*, pp.87 and 133.
92. Jones, *Tinfields of the World*, pp.176–77.
93. Ibid., pp.182 and 189; Wong, *Malayan Tin Industry* (1965), p.210; Yip, *Tin Mining Industry of Malaya*, pp.87, 133, 135.
94. Yip, *Tin Mining Industry of Malaya*, Table II–9.
95. Ibid., pp.137 and 143; Wong, *Malayan Tin Industry* (1965), p.209.
96. Yip, *Tin Mining Industry of Malaya*, p.211.
97. G.C. Allen and A.G. Donnithorne, *Western Enterprise in Indonesia and Malaya* (1957), p.169.
98. Braake, *Mining in the Netherlands East Indies*, pp.37 and 43.
99. Allen and Donnithorne, *Western Enterprise*, p.170; Geographical Handbook Series, *Netherlands East Indies*, VII (1944), p.262.
100. *Netherlands East Indies*, p.262.
101. W. Fox, *Tin: The Working of a Commodity Agreement* (1974), p.32.
102. Allen and Donnithorne, *Western Enterprise*, p.170, suggest an output for Billiton of 200 tons in 1861 and 5,000 tons in 1878, which would have made it equal to Banka.

103. *Tin: World Statistics* (1932), pp.57 and 62.
104. Falkus, 'Tin Output in Siam', Table 1.
105. Ibid., p.15. Falkus also mentions political and administrative problems.
106. Jones, *Tinfields of the World*, p.214; W. Fox, *Tin*, p.40; Falkus, 'Tin Output in Siam', Table 3.
107. G. Blainey, *The Rush That Never Ended* (Melbourne, 1963), p.130; Schmitz, *World Non-Ferrous Metal Production*, p.163.
108. Jones, *Tinfields of the World*, pp.343 and 362; Blainey, *Rush That Never Ended*, p.130; C.M.H. Clark, *A History of Australia*, Vol. IV (Melbourne, 1978), p.377.
109. Jones, *Tinfields of the World*, pp.333 and 343; Blainey, *Rush That Never Ended*, p.208.
110. Blainey, *Rush That Never Ended*, p.208; Stokes, *Mines and Minerals*, p.135.
111. Ibid., p.208; Stokes, *Mines and Minerals*, p.135.
112. G.L. Buxton, '1870–90', in F.K. Crowley (ed.), *A New History of Australia* (Melbourne, 1974), p.170; Blainey, *Rush That Never Ended*, p.209; A.G.L. Shaw, *The Story of Australia* (1954), p.179; Stokes, *Mines and Minerals*, p.136.
113. Schmitz, *World Non-Ferrous Metal Production*, p.165.
114. Stokes, *Mines and Minerals*, p.148; Blainey, *Rush That Never Ended*, p.210.
115. A.G.L. Shaw, *The Economic Development of Australia* (1944), p.133; Jones, *Tinfields of the World*, p.331.
116. Stokes, *Mines and Minerals*, p.152.
117. C.F. Geddes, *Patiño: The Tin King* (1972), p.55; H.S. Klein, 'The Creation of the Patiño Tin Empire', *Inter-American Economic Affairs*, XIX (1965), p.8.
118. H.S. Klein, *Bolivia: The Evolution of a Multi-Ethnic Society* (New York, 1982), p.161.
119. Ibid., p.162.
120. Jones, *Tinfields of the World*, p.324.
121. Geddes, *Patiño*, p.23; H. Osborne, *Bolivia: A Land Divided* (1964), p.104.
122. D.J. Fox, *The Bolivian Tin Mining Industry: Some Geographical and Economic Problems* (1967), p.6.
123. Quoted in Barton, *History of Tin Mining*, p.273.
124. Fox, *Tin*, p.62; Fox, *Bolivian Tin Mining*, p.8.
125. Jones, *Tinfields of the World*, p.327; the capital quoted here is an underestimate since Patiño had paid more than £1m for two other mines in 1910 and 1912 and had lost more than £1m on an unsuccessful mine in 1914. Klein, 'Patiño Tin Empire', pp.9, 10 and 11.
126. P. Walle, *Bolivia; Its People and its Resources* (1914), p.342.
127. Geddes, *Patiño*, p.356.
128. Fox, *Bolivian Tin Mining*, p.8.
129. Klein, 'Patiño Tin Empire', p.10.
130. Ibid., p.16.
131. Geddes, *Patiño*, p.268; H.S. Klein, *Parties and Political Change in Bolivia, 1880–1952* (1960), pp.34 and 119.
132. A.O. Anjorin, 'Tin Mining in Northern Nigeria During the Nineteenth and Early Part of the Twentieth Centuries', *Odu* (April 1971), p.56.
133. Ibid., p.55.
134. B.W. Hodder, 'Tin Mining on the Jos Plateau of Nigeria', *Economic Geography* (Jan. 1959), p.109.
135. Anjorin, 'Tin Mining in Northern Nigeria', p.59; A.N. Cook, *British Enterprise in Nigeria* (Pennsylvania, 1964), p.229; B. Freund, *Capital and Labour in the Nigerian Tin Mines* (1981), p.31; Sir C. Orr, *The Making of Northern Nigeria* (1965, reprint from 1911), p.209; Stokes, *Mines and Minerals*, p.373.
136. Orr, *Making of Northern Nigeria*, p.210; Freund, *Capital and Labour*, pp.46 and 59; C. Newbury, 'Trade and Technology in West Africa: The Case of the Niger Company, 1900–1920', *Journal of African History*, Vol. XIX, No. 4 (1978), p.564.
137. Freund, *Capital and Labour*, p.59.
138. Break-even price estimated from total profits in 1914 said to be £119,000 on total

receipts of £672,000 at an average price of £151. Freund, *Capital and Labour*, p.37; Schmitz, *World Non-Ferrous Metal Production*, p.297.

139. Anjorin, 'Tin Mining in Northern Nigeria', p.62; Schmitz, *World Non-Ferrous Metal Production*, p.167.
140. Cook, *British Enterprise in Nigeria*, p.229; Hodder, *Jos Plateau*, p.109; J.H. Morrison, 'Early Tin Production and Nigerian Labour on the Jos Plateau, 1906–1921', *Canadian Journal of African Studies*, Vol. XI, No. 2 (1977), p.207.
141. Anjorin, 'Tin Mining in Northern Nigeria', p.57.
142. Fox, *Tin*, p.47. By comparison, Nigeria in 1911 employed 5,832 workers at 0.17 tons of tin per man/year, while Malaya managed 0.22 tons per man/year. In 1926, Nigeria employed 31,375 men at 0.23 tons per man/year and used 0.84 horse-power per ton; Malaya, 1926–30, produced 0.54 tons per man/year and used 2.65 h.p. per ton. Yip, *Tin Mining Industry of Malaya*, pp.138 and 383; Freund, *Capital and Labour*, p.76; Fox, *Tin*, p.43.

MINERAL PRODUCTION, ORGANISATION AND TECHNOLOGICAL CHANGE: THE COEUR D'ALENE DISTRICT OF IDAHO, 1890–1933

By ROGER BURT

The history of base metal mining in America is a subject that has received surprisingly little attention. Much has been written on the exploitation of precious metals – the gold rushes, the colour of mining camps, the effects of increased bullion supplies on the money supply and economic development – while the less glamorous but hardly less important copper, lead and zinc mining industries have been left in the shadows. This apparent lack of interest, however, is not confined to America. In most countries, metal mining history has come a poor second to the study of gold and silver or the often larger and more populous coal industry. Yet things are beginning to change, and the fundamental importance of mining to economic growth and development is now widely acknowledged. Recent well attended international conferences on the history of mining have testified to the mushrooming interest in all aspects of the subject.

To facilitate, encourage and help shape this interest, members of the mining history group centered at the University of Exeter have for some years been involved in the collection and publication of national and international series of mineral statistics. Much mining history is highly qualitative in approach, lacking even very basic measures of scale, costs, profitability or geographic distribution, and the work at Exeter has been designed to make such data readily available as a starting point for more analytically rigorous research. Since the early 1980s the group has been involved in disaggregating British output data down to the level of individual mines and enterprises. Data are now available for the period from the mid-nineteenth century to the First World War, not only for ore production but also metal content, ownership, management and employment.[1] With data at this level of detail, it is possible to document carefully both the changing internal structure and economic performance of the industry, as well as its response to evolving international forces and the influence of external changes in world supply, consumption and prices.

Similarly, United States mining history, if it should ever be properly integrated with mainstream economic and business history, needs equally sound quantitative foundations. The USA is particularly fortunate to have had very active national agencies concerned with the collection and publication of data on the mineral industries. The USA

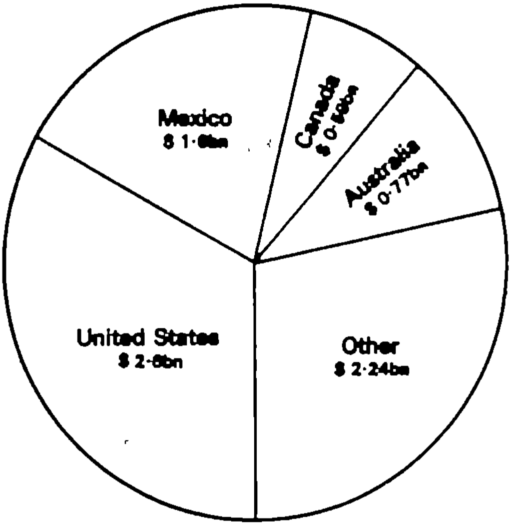
Geological Survey, and later the USA Department of Commerce, published an annual compendium of the *Mineral Resources of the United States* giving details of production of all economically important minerals from the national, down to the state and county levels.[2] Details of mine-by-mine production, though collected, were never published, but detailed accounts of the performance of important mines were often incorporated in narrative reports on individual districts. It is possible that the detailed returns do still survive in manuscript form, at least from the early twentieth century, but they are not generally available.[3] However, another route to similar data is possible through returns of state taxes on mining companies. These taxes varied between states in their nature and incidence, and surviving data are not available for all areas, but for some they do provide an valuable record.

What follows is an attempt to show how the data collected by the state of Idaho on mining activity in the important Coeur D'Alene lead/silver/zinc district can be set alongside other material published in the annual *Mineral Resources of the United States* to produce a quantitative overview of mining in that county, from the years of rapid development around the beginning of the twentieth century to the desperately difficult period of the great depression in the early 1930s. The paper looks at the Coeur D'Alene within the national and international mining economy; the developing structure of mining within the district; and the responses of individual mines to changing mining conditions and prices. To set the scene, attention is first given to the role played by the USA in the world lead and silver industries, using the international production data compiled by Schmitz. Secondly, the contribution of Idaho and the Coeur D'Alene will be assessed from aggregate data published by the USA Geological Survey and the Bureau of Mines. Also offered is a brief discussion of the origins and early development of the Coeur D'Alene district, drawn mainly from the publications of the Geological Survey and the early reports of the Idaho Inspector of Mines. Thirdly, the disaggregated data from state tax returns are introduced to indicate the general structure of mining activity in the district. Fourthly, consideration is given to the value of the published annual reports of the larger companies in elaborating the quantitative story of change and development during the period, and the very important effects of technological change and diversification in minerals produced. The fifth and final section adds some more general remarks on the development of mining and mining history in the United States.

I

Between 1907 and 1933, world production of lead and silver was valued at around $7.8 billion at current prices, with lead out-valuing silver by a ratio of 4:3. Annual production was reasonably steady at between $200 and $250 million in the years before the First World War, rising to over $300 million between 1917 and 1920, and, after a brief post-war fall, it grew again to average over $400 million for the rest of the 1920s. The depression years between 1930 and 1933 saw a sharp downward slide to the lowest levels of the century (less than $150 million in 1932). Almost exactly one third of the world's output over the whole period, just over $2.6 billion of lead and silver, came from the United States. It was the world's largest producer, followed by Mexico with $1.6 billion, Australia with $0.77 billion and Canada with $0.59 billion (see Figure 1).

FIGURE 1
WORLD OUTPUT OF LEAD AND SILVER, 1907–33
(by value)



With such an important contribution to the total, USA and world production naturally moved in tandem. Between 1907 and 1917, the quantity of lead produced in the USA almost doubled (trebling in value), before falling back again to pre-war levels during the depressions of 1919 and 1921. Thereafter it again grew steadily to a second, greater peak in the mid-1920s, remaining at a very high level until 1929, though the value of production fell off with a slight decline in prices. From that year the industry was very severely affected by the general collapse of the national and international economy, and by 1933 the value of production stood at less than half that of 1907.

The course of silver production was similar before 1921. The war years saw a major expansion of production and a doubling in value, before the slide into depression. Thereafter production recovered briefly but declining silver yields from the ore and relatively depressed prices meant that in 1929 both the volume and the value of production stood at levels only slightly above those of 20 years earlier. The depression years again proved disastrous, with production slumping to less than a quarter of its 1929 level during the course of the next four years.

The decline experienced by USA mines during the early 1930s was much more severe than that experienced by most foreign competitors. Excluding the exceptionally large expansion of output during the First World War, American producers had sustained a relatively stable, if slightly declining, share of world silver and lead output for most of the period. However, between 1929 and 1933 their contribution fell by nearly one-third to just over one-fifth of lead production and an eighth of silver production. This was probably because of the particularly severe decline in demand in the USA domestic market, allied to the continuation of relatively high operating costs. Even the largest and most efficient mines were vulnerable to major price movements. By the 1930s most American mining districts had been intensively worked for over half a century; mines were becoming deeper, the ores generally less rich and more difficult to get, and labour charges – the largest item of cost for most producers – remained amongst the highest in the world. It was a classic case of an established ageing industry finding it increasingly difficult to compete in a low price market with relatively new and lower cost producers. A long- as well as a short-term turning point had been reached. Although prices were to recover – rising to almost twice the 1932 level by 1937 – production in the USA remained depressed, and even the boost given by the Second World War failed to restore the peak levels of the earlier period. By 1960 USA lead production had fallen to 36 per cent of its peak 1925 level and to less than 10 per cent of world output. Silver production was more than halved over the same period.

Zinc mining in the USA was less important than the mining of lead and silver, but nevertheless the development of the industry was very impressive. By the late 1890s production exceeded 100,000 tons annually and was expanding rapidly. In 1907 the USA accounted for nearly a third of world output, and by 1919, following the disastrous effects of war on European producers, this figure had risen to an all-time high of 60 per cent. These levels could not be sustained, however, and production fell dramatically in the early 1920s. The USA share of world output returned to around one third. Output recovered quickly in the next four years, but had levelled off by the middle of the decade. The effects of the depression were felt harder by the USA producers than those in many other countries. Output had fallen to just a third of its 1929 level by 1933. The USA share of world production fell to 21 per cent, the lowest since the opening years of the century.[4]

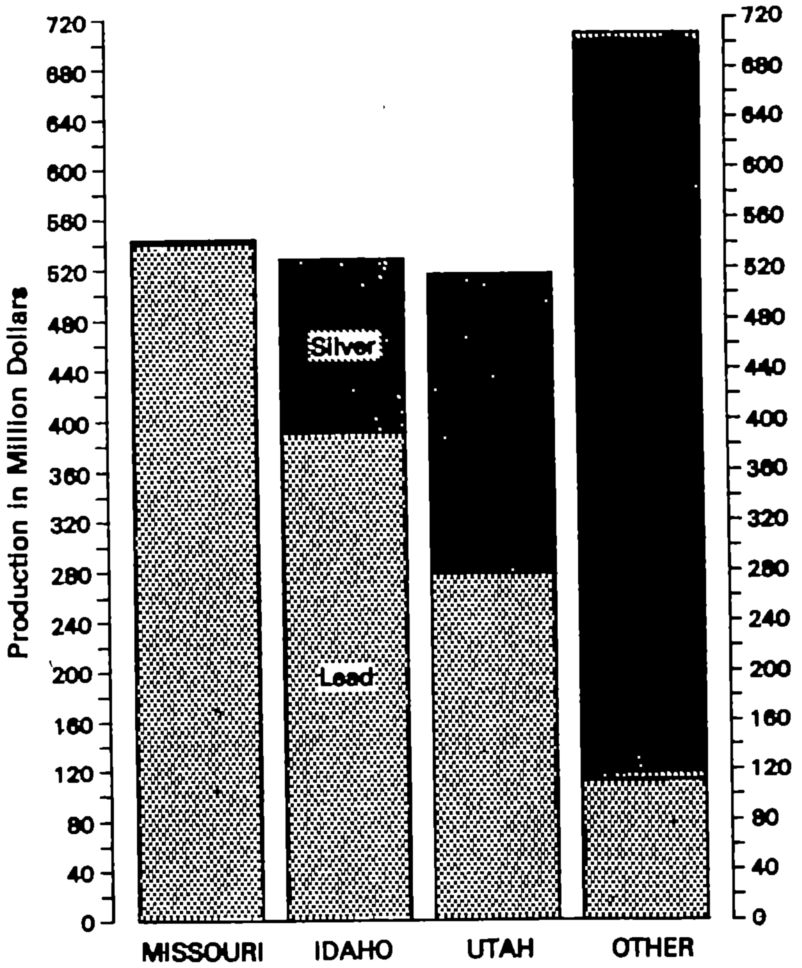
II

Within the United States the major producers of lead and silver were located in the central and western regions. During the period 1907 to 1930 the low grade ores of Missouri yielded $541.6 worth of lead, or just over a third of national output, followed by Idaho with $389.2 million and Utah with $278.3 million. Together these three states completely dominated the country's lead production, accounting for nearly four-fifths of total output.

Most of the country's silver output during the period came from Utah, with a production of $238 million, followed closely by Montana with $205.5 million, Nevada with $158.3 million, and Idaho with $139.6 million. Missouri's production was a very low $1.6 million. With the exception of Montana, where large quantities of silver were derived from argentiferous copper lodes, lead and silver were generally found together in the same fields. If the values of the two metals are combined, Missouri emerges as the largest producer during the period; its dominance as a lead producer more than compensating for its very low silver output, to give a total value of production $543.2 million. It was closely followed, however, by Idaho, with a combined production valued at $528.9 million, derived in the ratio 3:1 from lead and silver; and by Utah with an output of $516.3 million, lead and silver ranking equally. Idaho and Utah were the great silver-lead producing states, accounting for more than 40 per cent of the country's total output of these two metals during the period, with Idaho fractionally the more important (see Figure 2).

The general fluctuations in Idaho's lead production during the period were similar to those of the nation as a whole, apart from an exceptionally sharp decline in the post First World War depression and a lesser rate of expansion during the 1920s. The state's share of total USA production thus fluctuated only slightly, being generally around an average 31.6 per cent for the years between 1907 and 1917, and then, after falling significantly just after the war, settling around a lower average of 21.9 per cent for the years 1919 to 1930. Idaho silver production pursued a more independent course, with the main trend being stability rather than great fluctuations in output. The state took little part in the rapid expansion of output in the pre-war and early war years, but finally responded with high production levels in 1916–18 when other producers were already beginning to cut back. A brief resurgence of lead and silver production in 1920 provided some short relief from the otherwise depressed post war years, but Idaho figured little in the expansion of silver production in the middle of the decade. By 1929 both the volume and the value of the state's silver output had fallen noticeably below the level of the pre-war years. With the slide into depression, however, production levels in Idaho were sustained much better than in most other states; its share of total USA silver

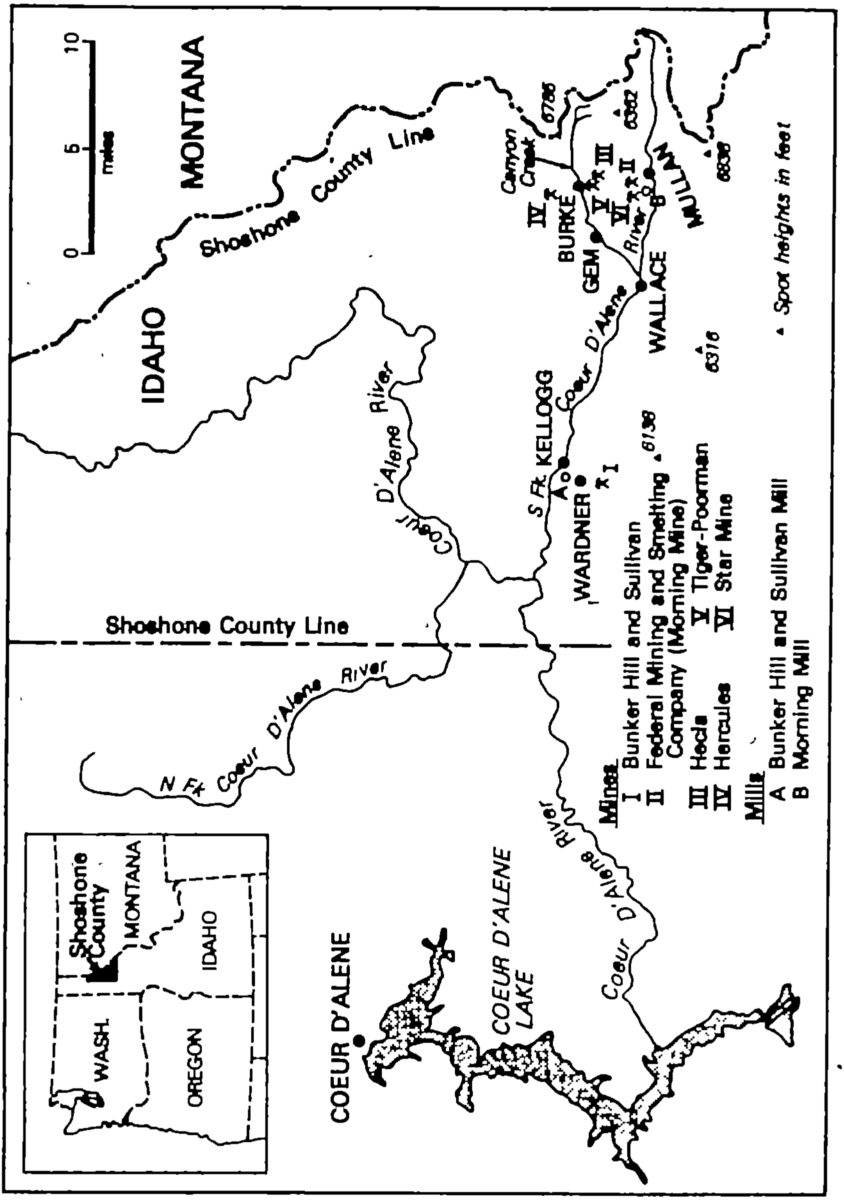
FIGURE 2
US LEAD AND SILVER PRODUCTION, 1907–30



production nearly doubled – from less than 16 per cent in 1929 to more than 30 per cent in 1933.

Most of the lead and silver output of Idaho came from the Coeur D'Alene district of Shoshone county in the northern panhandle of the state. Extending over an area of only 200 square miles, this district was first developed for large scale mining activity in the early 1890s, and within 10 years had become one of the world's premier fields. It consisted of thick, sharply folded sedimentary rocks of Algonkian age, MAP

THE COEUR D'ALENE MINING DISTRICT



heavily mineralised with strong wide veins of galena, commonly found in fissures of crushed, brecciated quartzite. Significantly, these lodes were unusually poor at surface but improved considerably at depth. It was this that sustained the industry into the 1980s, long after mines in many other areas had been closed. The first discoveries of silver-lead were made near the eastern limits of the district in 1884, but major mining operations first started in the following year in the western area. By 1891 there were 40 mines under development, of which 26 were already in production. As early as 1908 Ransome and Calkins could note that:

> For several years the Coeur D'Alene has been the leading lead producing district in the United States. Out of a total of about 280,000 short tons of lead produced by the mines in this country in 1903, over 100,000 tons, or rather more than one-third, came from the Coeur D'Alene district. This considerably exceeded the combined product of Missouri, Kansas, Iowa, Illinois, Wisconsin, and Kentucky for that year, and was about double the production of Utah or Colorado. In 1905, out of a total production for the country of about 302,000 tons, the Coeur D'Alene district supplied nearly 124,000 tons.[5]

Table 1 shows the course of mineral production in the Coeur D'Alene district from the earliest years through to 1907; illustrating the rapid expansion of output during the late 1880s, its levelling off during the early and mid-1890s, and the second surge of expansion during the late nineties and early 1890s.

Although its geographical isolation and the surface poverty of its lodes had ensured that the Coeur D'Alene was one of the last of the great new western mining regions to be brought into production, the district had many advantages, and once opened up, could in many ways be regarded as one of the most favourable to mining activity in the whole Rocky Mountain region. The altitude was not too great, the climate not too hostile, there were abundant timber resources and water power, and the heavily broken terrain initially permitted deep mining by means of long horizontal adit levels. The latter was particularly important in helping to minimise the cost of working the deep lodes because it reduced greatly the expense of drawing the broken ore from underground workings, and minimised the high pumping charges that would have resulted from shaft mining.[6]

Two developments were essential for the beginnings of large-scale mining in the district: the provision of reasonably inexpensive transport facilities to connect the mines with outside processing and consuming districts; and sufficient capital to meet the heavy investment necessary to exploit the rich hidden lodes. Both conditions were met from the late 1880s. Spur lines were constructed into the district from the Northern Pacific Railroad, leaving the main line at Missoula, Montana, and from the Union Pacific, leaving the Pendelton–Spokane

TABLE 1

METAL CONTENT OF ORES SOLD AND TREATED IN THE COEUR D'ALENE REGION OF SHOSHINE COUNTY, IDAHO, 1884–1907

	Lead '000 tons	Silver '000 oz	Gold '000 oz	Copper & Zinc tons	Total value '000 $	Lead & Silver as % of total value	
						Lead	Silver
1884	-	-	12.5	-	258.4	-	-
1885	-	-	18.2	-	376.6	-	-
1886	1.3	116.2	8.8	-	436.3	31.7	26.5
1887	5.3	340.0	7.4	-	1,023.0	52.6	32.5
1888	7.1	554.0	10.3	-	1,438.2	49.0	36.2
1889	15.6	1,095.3	8.4	-	2,533.0	52.6	40.5
1890	24.6	1,500.0	8.0	-	4,132.5	57.9	38.1
1891	29.5	1,825.8	10.0	-	4,868.4	58.7	37.1
1892	24.9	1,196.0	11.0	-	3,538.7	64.0	29.5
1893	26.4	1,963.6	14.7	-	4,268.6	56.9	35.9
1894	26.8	2,343.3	17.5	-	3,816.0	51.6	38.9
1895	27.7	2,471.3	18.4	-	4,016.0	50.0	40.5
1896	33.3	3,163.7	17.4	-	4,704.0	47.0	45.3
1897	51.6	3,756.2	16.4	-	6,764.0	61.5	33.5
1898	50.3	3,522.0	13.0	-	6,565.3	64.4	31.5
1899	44.6	2,737.2	8.6	-	6,263.4	70.9	26.3
1900	72.8	5,261.4	5.7	-	10,588.7	68.1	30.8
1901	61.6	4,339.2	4.9	-	8,731.6	69.0	29.8
1902	66.7	5,033.9	4.7	-	8,847.5	68.8	30.0
1903	92.6	5,471.6	7.7	-	11,885.1	73.8	24.9
1904	100.5	6,143.0	2.2	0.6	13,592.0	68.2	25.8
1905	113.3	7,293.0	1.9	2.4	17,193.9	67.7	23.7
1906	112.5	7,944.3	c.4.0	3.7	21,124.0	67.5	25.1
1907	102.4	7,266.8	c.4.0	6.3	18,888.2	65.0	25.1

Source: F.L. Ransome & F.C. Cathcart Calkins, *The Geology and Ore Deposits of the Coeur D'Alene District, Idaho*; V.S. Geological Survey, Professional Paper 62 (1908); *The Mineral Resources of the US* (1913), Pt. 2, p.780.

branch at Tekoa, Washington. These gave direct, if expensive, rail connections both to the western and eastern coasts. Concentrates were initially shipped to Omaha, Nebraska and Denver, Colorado for smelting. But, gradual improvements notwithstanding, transportation remained difficult and costly through to the 1920s.[7]

A ready supply of capital was assured not only because of the promise of rich rewards, but also because of the very fact that the district was one of the last American mining fields to be developed. As the Idaho Mines Inspectorate noted in 1900: 'having largely exhausted the advantages of the older states for quick returns on the investment of capital in mines, investors have sought new fields more generally than hitherto and Idaho has offered them such inducements for legitimate mining as have attracted a much larger share of business-like investigation and actual investment of capital'. The flow of capital was the single most important variable in the early development of the district; the essential ingredient for working on a scale large enough to make economic sense. While capital flowed, mining grew rapidly and flourished; when it diminished, as in 1910, development was curtailed and the industry stagnated.[8]

The process of investment was stimulated by the high silver content of Coeur D'Alene ores which, with rising silver prices, provided a valuable and attractive secondary product to lead.[9] High silver values put the district's mines in a position where lead could be 'mined on an extensive scale at low prices which prohibit the operation of mines in many other great lead districts'. Similarly, the production of zinc, unknown in the district before 1905,[10] was rapidly developed as a supplement to the relatively low grade lead ores.[11] By 1913 zinc had risen to rank second behind lead in terms of value of output. It was the promise of this highly valuable combination of metals that sustained mining companies through long years of expensive development work before the first rewards began to appear.[12] The Bunker Hill & Sullivan Co., for example, which was to become the most productive and profitable of all the district's ventures, invested heavily for over 15 years before rewarding shareholders with their first substantial dividends.

Although of fundamental importance, capital supply was not the only prerequisite of mining in the Coeur D'Alene. Like any other industry, the course and pace of development was conditioned by the availability of other factors of production, such as labour and skilled management, and support facilities, such as power and materials supply. During years of rapid expansion, temporary shortages of these factors could and did frustrate the realization of the district's full potential.

In 1900, for example, the great demand for engineers meant that some of those employed were judged to be 'entirely incompetent', and in 1906 production in the district was said to have been held back by shortages of fuel, electricity and labour – even though the latter appears to have expanded by 50 per cent.[13] In general, however, supply problems were quite minor in most years. Power supplies were generally adequate, and although wages were regarded as high, there was no suggestion that this imposed an intolerable burden on the mines.[14] Indeed, in several years labour was described as 'plentiful' and occasional downturns in production generated at least the possibility of unemployment. In 1906 mining across the state – predominantly in Shoshone County – occupied 7,000 men, nearly all English speaking American citizens, the majority native born. In managerial terms, this was a much preferred situation to that pertaining in many other mining districts during their early years of development, when miscellaneous immigrant groups, with a wide variety of different languages and traditions, were often in the majority.

The broad course of lead and silver production in the Coeur D'Alene has already been outlined when considering Idaho's changing position as a national producer. In general, the district continued to increase its output of both metals and to dominate Idaho's production, although its share of national output declined with the rapid expansion of mining elsewhere (see Table 2).

TABLE 2

PRODUCTION OF LEAD AND SILVER FROM THE COEUR D'ALENE DISTRICT OF SHOSHONE COUNTY AS A PERCENTAGE OF IDAHO AND US PRODUCTION FOR FIVE-YEAR PERIODS, 1905–1929

Lead (Long Tons)

Years	US Production	Idaho Production	Coeur D'Alene Production	Coeur D'Alene as % of US	Coeur D'Alene as % of Idaho
1905–09	1,672,427	522,975	514,739	30.8	98.4
1910–14	1,999,362	647,945	614,945	30.7	94.8
1915–19	2,467,808	710,571	670,946	27.2	94.4
1920–24	2,260,913	510,223	479,122	21.2	95.6
1925–29	2,954,456	632,184	600,421	20.3	94.9

Silver (oz.)

Years	US Production	Idaho Production	Coeur D'Alene Production	Coeur D'Alene as % of US	Coeur D'Alene as % of Idaho
1905–09	274,323,000	40,624,953	35,069,895	12.8	86.3
1910–14	325,549,000	46,329,332	43,160,521	13.3	93.2
1915–09	341,832,000	50,850,736	47,302,341	13.8	93.0
1920–24	298,343,000	34,956,003	28,876,474	9.7	82.6
1925–29	307,555,000	42,614,025	39,199,721	12.7	92.0

However, it is also important to note the diversification in the district's output. Between 1907 and 1933, for example, it produced 90 per cent of Idaho's zinc output and half its copper. Although these other minerals accounted for less than ten per cent of the district's total mineral output by value in most years, a rapid expansion of zinc production briefly carried it to nearly 30 per cent in 1915–16 and in the late 1920s it rose again towards 20 per cent.

III

In order to examine the output of individual mines within the Coeur D'Alene, it is necessary to look for new sources of data. Although the Geological Survey and Bureau of Mines collected, and still retain, detailed returns from individual producers, they are legally prohibited from publishing or giving access to that material. For Shoshone County alternative sources of data do exist. Their collection began in 1902 and continued in unbroken series beyond the 1930s. Unfortunately they do not cover the early development of mining in the district, but they do cover the years of peak production in the early twentieth century, and the later years of recession and decline. It has proved difficult to trace the original manuscript records for the earliest returns, but this deficiency is made less serious because tabular extracts were published regularly in the local newspaper, the *Wallace Miner*. The first returns, backdated to 1902, appeared in the paper in May 1913 and they were regularly published annually thereafter. The editor of the newspaper explained that the data presented had been drawn from the mining profits tax returns made to the state tax authorities.

The information returned to the tax assessor was arranged in the tables under six general headings:

(i) *The total tonnage of ore extracted.* This included high grade ore that was simply sorted and shipped directly as well as the lower grade material that was put through the concentrator.

(ii) *The gross value of the ore extracted.* Since the 'mix' of high and low grade ores varied between mines, the average value per ton was equally varied.

(iii) *The total cost of extraction.* This included all mining costs and, with relatively limited fuel and machinery outlays, mainly consisted of labour costs. It would be expected that mines producing high value ores would be able to support higher average costs per ton.

(iv) *Total costs of transport and reduction.* For some mines in the early years these items were listed separately, but they have all been aggregated here to conform with the later returns.

(v) *The total cost of improvements and repairs.* This mainly comprised maintenance expenditure, but practice may have varied between mines as to which items included under this heading.

(vi) *Net profits and losses.* This item has been calculated by subtracting the total costs of extraction, reduction, transport, improvements and repairs from the gross value of the ore extracted.

These are clearly crude measurements of total income and expenditure, and with the tax being levied on profits there was every reason to minimise the former and maximise the latter. The authorities, however, could easily check the returns of the larger companies against their published annual reports and there are good reasons for believing that the companies at least minimised the discrepancies. For example, a check of the declared gross value of the ore extracted by the Bunker Hill & Sullivan Co. as reported to the County Assessor, against the returns made in their annual reports to stockholders, reveals a close similarity for the years 1902 to 1909, with small discrepancies being largely explained by differences in the accounting year, one to 1 May, the other to 1 June. For the nine years taken together, the gross value declared in the annual reports was 2.4 per cent lower than that returned to the County Assessor. The discrepancy in the company's declared profits over the period was larger, with the returns to the Assessor being an unexpected 18.2 per cent higher than those in the annual reports; in short, they were certainly not under-recorded for the Assessor. This discrepancy is probably explained by differences in the methods of calculating profits, with the company allocating some part to reserves.[15]

Although the returns to the County Assessor appear to have been reasonably accurate and reliable, they were not necessarily complete for all mines. Indeed, they appear to have been made only by the larger mines actually producing ore and making profits, and not by numerous others with little or no output. They are accordingly a guide to only one aspect of the district's mining activity, albeit the most significant sector in terms of actual production. Both the *Mineral Resources of the United States* and the *Wallace Miner* refer to between 40 and 60 producing mines in most years between 1902 and 1933, while the published returns to the County Assessor rarely gave details for more than 20 companies. Assessed in terms of the value of the ore produced, however, the mines making returns accounted for between 80 per cent and 90 per cent of the total output of the district.

Assuming that the County Assessors returns are a reasonably accurate and useful guide to the most productive sector of Coeur D'Alene mining after 1902, what do they tell us about the structure of that industry?[16] There were 83 separate mining companies and lessees making published returns for various years between 1902 and 1933, with usually between 10 and 20 reporting in any one year. They spanned a wide range of productive activity, from small intermittent producers and marginal profit makers, to large-scale operations that produced large tonnages and high profits throughout. Of the total, 33 were short term lease-holders with an annual turnover of less than $40,000. Of the 50 independent mining companies, the majority again appear to have had short productive lives and a limited output. With great differences in the number of years for which companies made returns, it is difficult to produce a general classification of these mines by output. However, a good impression of the structure of the industry can be derived by dividing the average annual production of companies reporting in two short sub-periods by production range, and comparing the results (see Table 3).

In both sub-periods the division suggests a broadly based pyramid of

TABLE 3

AVERAGE ANNUAL OUTPUT OF MINES REPORTED IN THE YEARS 1902–6 AND 1925–29 CATEGORISED BY RANGE OF PRODUCTION

Average Annual Value of Ore Extracted ($)	Total Number of Mines in Category	
	1902–6	1925–29
0 – 0.499m	8	28
0.5 – 0.999m	4	6
1m – 1.999m	3	2
2m – 2.999m	1	–
3m – 4.999m	1	1
5m – 15m	–	2
Total number of mines reporting	17	39

enterprise. Most of the reporting mines were small operations, with an average annual value of production of less than $500,000, while something like a third to a fifth were medium producers with an average output in the $500,000 to $2 million range. In both sub-periods just two or three large companies had an output in excess of $2 million. In terms of shares of output, this small group of large-scale firms was entirely dominant. During the period 1902–6, the average combined annual output of the Bunker Hill & Sullivan Co. and the Federal Mining & Smelting Co. was equal to something like three-quarters of the average total reported output from the district. In the period 1925–29 it still amounted to two-thirds of average total production. By virtue of their control of the most productive deposits, these two companies were responsible for more than half of the gross value of ore extracted between 1902 and 1933, and, together with their closest rivals, the Hecla and Hercules companies, their share rose to almost exactly four-fifths of the total. They were also responsible for a similar share of the total reported profits of the district. As a group, these four companies were far ahead of the other producers, and, in quantitative terms at least, their story is that of the Coeur D'Alene.

The profitability of different companies, expressed in terms of the value of output to profit ratio, varied considerably between them. For example, the profits of the Bunker Hill & Sullivan Co. were equal to 30.7 per cent of the company's gross value of output, while those of the Federal Mining & Smelting Co. were only 19.9 per cent. For the Hecla and Hercules companies profit rates were higher, at 37.7 per cent and 34.9 per cent respectively. These variations extended across the whole range of production, with no clear correlation with the scale of output;

the bigger companies were not necessarily the most profitable. Thus the profits of two of the smallest producers, the Black Hawk Mining Co. and Sidney Mining Co., ranged from 4.3 per cent to 86.2 per cent of the value of output respectively, while two medium range producers, the Callahan Mining Co. and the Caledonian Mining Co., returned 5.7 per cent and 55 per cent respectively.

Such differences as these stemmed from the fact that working costs did not vary proportionately with the value of ore produced. It would be expected, and in most cases can be observed, that the mining companies increased the working of high cost marginal deposits, with concomitant increases in average costs, as the value of the ores increased. At the Caledonian and the Tamarack & Custer companies, for example, the average value of the ore produced was $38.99 per ton and $50.13 per ton respectively, while production costs averaged $17.54 and $42.02 per ton; the higher ore values at the Tamarack & Custer supporting higher working costs. To the extent that the working costs were proportionately higher at the Tamarack & Custer mines than they were at the Caledonian, however, the profitability of the former in terms of the value of the ore produced was much lower than at the latter; 16.2 per cent compared with 55 per cent. Similarly, the higher profitability of the Bunker Hill & Sullivan compared with the Federal Mining & Smelting Co. resulted from a superior margin between ore values and working costs. The value of the ore was 34.6 per cent higher per ton at Bunker Hill & Sullivan while the overall cost of production per ton was only 16.9 per cent higher.

It follows that when differences in values and production costs were proportionately similar, the overall level of profits as a percentage of the value of output were likewise similar. Thus at the Hercules Co., ore values and working costs were both approximately six times higher than those of the Hecla Co. and their general level of profitability was approximately the same. Overall, however, the larger companies generally seem to have kept their working costs down relative to ore values, yielding a higher level of profitability than the average for all independent operators, while the smaller companies and the lessees were generally below the average. This suggests that there were at least some marginal returns to scale that encouraged the expansion of operations and ownership.

The structure of the companies' working costs was broken down into costs of extracting the ore, transport and reduction, and improvements and repairs at the mines. These are fairly rough divisions, however, and caution must be exercised when analysing the data because it is likely that companies differed in their methods of allocating costs. For example, the cost of certain types of development work, such as driving levels or shafts to find new lodes or improve the working of existing deposits, could have been variously entered either under extraction costs or improvements and repairs. Similarly, mines might have varied in the allocation of the costs of sorting and transporting the ore in and around the mine site between extraction costs and transport and reduction. Nevertheless, some broad conclusions are in order.

Firstly, in nearly every case the total outlay on working costs was dominated by expenditures on extraction, transport, and reduction, with comparatively little being spent on improvements and repairs. Improvements and repairs usually accounted for considerably less than 10 per cent of total expenditure, and it would appear that the mining companies generally adopted a narrow interpretation of this item, preferring to write off the large sums spent on development work as extraction charges.

Secondly, at most mines the total expenditure on extraction and transport and reduction was almost equally divided under those headings. This means that in spite of the considerable depths at which the ore was being worked, at most mines the cost of actually extracting the ore was fixed at about a half of total operating costs. For all mines taken together, extraction costs averaged 46.2 per cent of total operating expenditure and the majority of companies fell within the range of 40 per cent to 60 per cent. This held true whatever the overall level of costs, and is somewhat surprising in view of the observations made above about companies tending to permit costs of production per ton to rise with increases in the value of the ore produced. It would normally be expected that the companies with higher costs incurred them mainly by increasing extraction costs, as they worked more difficult ores, with transport and distribution staying relatively constant. In practice, however, both items appear to have been almost equally variable. At the Hecla and Hercules Mines, for example, total costs were roughly equally divided under the two headings even though at the latter they were almost six times the level per ton extracted than at the former.

At first sight, the answer to this conundrum might be thought to lie in variations in reduction costs, since the higher value ores were also more complex and required more expensive treatment. The published data provide a limited basis for testing this hypothesis, because the returns for some mines for a few years give transport and reduction costs on a disaggregated basis. Surprisingly, however, these figures provide no support for the hypothesis. At the low cost Hecla mines, for example, transport costs averaged $1.54 per ton for the three years 1903–5, while reduction costs averaged $1.45 per ton; at the high-cost Hercules Mines they averaged $11.95 and $7.98 per ton respectively over the same period. Both costs were considerably higher at the Hercules mines, with transport costs, not reduction costs, seeing the greater proportional increase. On the basis of this admittedly slim evidence, therefore, it must be assumed that extraction and transport and reduction costs were almost equally variable between mines, in combination producing the major overall cost differences between the mining companies.

Thirdly, the usual distribution of costs between extraction and transport and reduction appears to have broken down at those mines returning net losses. In six out of the nine loss makers, extraction costs significantly exceeded transport and reduction costs by amounts that were equal to the greater part of overall loss. Most spent a larger than normal share on improvements and repairs, with transport and reduction outlays amounting to only 35.3 per cent of total expenditure. Here at least the potentially critical effects of variable extraction costs is clearly illustrated.

Finally, it is worth noting that County Assessors' returns were not the only significant statistical series published in the *Wallace Miner*. None of the others were as regular or continuous, but one, appearing in April 1913, is of particular interest. This lists 327 mining companies which had operated in the district up to that time, giving for each the number of claims held, the amount expended for development and improvements since starting, and a simple yes or no for whether it was productive. Most of the companies held less than ten claims each, though some, such as the Bunker Hill & Sullivan, owned several hundred. Together the claims totalled 2,890 and covered 57,800 acres. Total development expenditure was estimated at $15 million, mostly attributable to the larger companies, which generally were the only ones returned as currently productive – that is, 16 out of the 327 companies. In another return, almost exactly a year later, the cumulative dividends of the largest Coeur D'Alene mines up to the end of 1913 were estimated at over $38 million, with those for the Bunker Hill and Sullivan alone amounting to $15 million.

IV

As has been seen, the output of the Coeur D'Alene was dominated by the activities of just four large companies: Bunker Hill & Sullivan, Federal Mining & Smelting, Hecla, and Hercules. Together they were responsible for over 75 per cent of the value of the lead and silver ores produced in Idaho between 1907 and 1933, the equivalent of 15 per cent of USA output and 5 per cent of world output. By using a combination of the County Assessors' returns, annual reports and other company records, it is possible to construct a detailed picture of the factors influencing their output and general level of profitability. A full exploration of these issues is beyond the scope of this article, but attention may be drawn to major issues and the wide range of quantitative information available for further research.

Although differences in working conditions between the various mines gave each company its own special story, they all experienced the general ups and downs of the district as a whole. They all saw a major expansion of production in the first decade of the century which, stimulated by mergers and takeovers, like the Federal Mining & Smelting Co.'s acquisition of the highly productive Morning Mine in 1905, gave them more than four-fifths of the Coeur D'Alene's total output. The development of other mines in the district, particularly after the sharp upward movement of prices following the outbreak of the First World War, rapidly reduced this domination of total output to less than half by 1915. Therefter all four companies quickly expanded their production, achieving peak levels in 1917 and early 1918.

In every case, however, production was constrained by shortages of labour and materials. This was a perennial problem for many of the more remote western mining districts, limiting responsiveness to surges in demand and prices. Thus just as production at the Bunker Hill & Sullivan mines had been held back during the boom of 1906 by shortages of labour, fuel and electricity,[17] so too the company's report for 1917 spoke of output being 'more or less hampered by scarceness of labour and materials'. Similarly it was reported in 1918 that production had been cut back 'solely due to a shortage in labour, particularly during the last six months of the year'. The shortages were caused not only by the general expansion of activity – particularly at the small and medium sized mines – but by men being lured away from the district by the high wages paid by war industries and the enlistment of many others for military service. In 1918, for example, the Bunker Hill & Sullivan reported that 264 of its men – 25 per cent of its labour force – had enlisted, and that this included many of its best workers. Labour scarcity called for even higher wages. Exploiting their improved bargaining position, the 1,223 employees of the Federal Mining & Smelting Co. negotiated a new sliding scale of payments from February 1916 based on the rising price of lead.[18] By 1917 this had raised the average wage per shift to $4.98, a 32.4 per cent increase over the 1914 level. Labour productivity declined over the same period by almost 25 per cent as a result of employing less skilled workers and more intensive working. The company's annual report suggested that the real cost of labour had risen by 77 per cent. Likewise, at the Bunker Hill & Sullivan mines, higher labour and material costs resulted in higher costs per ton, although these increases were offset to some extent by higher throughput and improved handling procedures.

Conditions only began to improve with the end of hostilities. In 1920 and 1921 the Bunker Hill & Sullivan was able to report that the labour problem was easing and that production was on the increase. Similarly, the Federal Mining & Smelting Co., having had its Morning Mine closed by a prolonged strike in 1919, was able to resume full production towards the end of that year. At the Hecla, production was cut in 1918 because of falling prices and uncertainties in the metal market, and like Federal it was hit by strikes in 1919. Here too, normal production levels were restored by the end of the year.

Early in 1920, the future prospects for the industry could hardly have appeared brighter. The metal market was strong, the supply of labour was improving and production increasing. However, conditions soon began to deteriorate. Prices fell rapidly to well below the pre-war average, while production costs, though cut back, had been elevated to a much higher plane.[19] Different companies reacted in different ways. The Hercules, seeing no immediate prospect of profitable production, immediately suspended mining operations, continuing only with development and maintenance work. By contrast, the Bunker Hill & Sullivan, working lower cost ores, tried to sustain its overall profit level by greatly expanding output. The gloom of the hour did not completely destroy confidence, and during 1921 a number of expansion plans were put in hand. Bunker Hill & Sullivan developed new properties in other parts of Idaho, as well as Mayo in the Yukon territory and Nixon Fork in Alaska, and joined as equal partners with the Hecla Co. in forming a new venture – the Sullivan Mining Co. – to develop the rich zinc deposits of the Star Mine. These were to be approached by a long cross-cut from the Hecla's existing underground workings.[20]

Confidence in the medium-term prospects for the industry were justified after the beginning of 1922. The reviving economy, powered by a rapid expansion of demand from the fast developing automobile and electrical industries, caused prices to begin a long secular revival which carried them to twice their 1921 level by 1925. After nearly 15 months of suspension, the Hercules again entered production in 1922, and the Federal Mining & Smelting Co., which had been stockpiling its zinc output from the Morning Mine, resumed shipments in December. The Bunker Hill & Sullivan sustained production at the high levels of 1921, which, together with a further slight reduction in production costs, meant that it was able to congratulate itself on 'earnings much larger than those made during the preceding year'.

Prosperity was fully restored by 1923. A sharp reduction in the price of silver after June, following the Federal Government's cessation of purchases at $1 per oz under the Pittman Act, briefly gave cause for concern, but the increasing strength of other markets more than offset its overall effect. Bunker Hill & Sullivan reported 'a substantial increase in operating profits', and the Federal declared that it was the best year ever in the history of its main asset, the Morning Mine. Even the ailing Hercules experienced something of a resurgence. Only the Hecla suffered a reversal in its fortunes.[21] This, however, was because of the accidental effects of fire rather than any fundamental deterioration in its economic position. On the 13 July, just as prospects were again beginning to improve, a severe fire swept through the town of Burke and spread to the Hecla hoist and surface plant, completely stopping production for the next six months. Development of the Sullivan Co.'s Star Mine, through the cross cut from Hecla, was also disrupted and it was not until the end of January 1924, with new plant now in operation, that normal work and production was restored.

Although 1924 was marked by the final closure of the Hercules, following the exhaustion of its major ore bodies, the other three leading firms prospered in the mid-1920s. Production at the Hecla was virtually fully restored, and Bunker Hill & Sullivan and the Federal Mining & Smelting Co. returned their highest ever operating profits. The Federal

Mining & Smelting Co. explained that this was 'principally due to ... increased average prices of metals, increased metallurgical recoveries per ton of ore, increased output of some mines, and favourable operating conditions'.[22] The important point was that profitability had been improved, not only by higher production and higher prices, but also by improved concentration and separation techniques, enabling more metal to be extracted from the same grade ores. This can be illustrated by reference to the mines' production record. Tables 4, 5 and 6, for example, show how the metal extracted from the ore and concentrate produced from the Federal, Bunker Hill & Sullivan and Hecla mines increased considerably during the 1920s. As details of production costs at the Bunker Hill & Sullivan show (see Table 7) these increases in output and productivity were not achieved without extra expense. Nevertheless, all of the producers seemed satisfied that the money was well spent.

TABLE 4

AVERAGE ANNUAL LEAD, SILVER AND ZINC PRODUCTION FROM THE FEDERAL MINING & SMELTING COMPANY MINES, 1914–15, 1924–25, 1929–30

Date	Ore Extracted	Metal content of the Ore			Metal Extractable from Ore		
		Lead	Silver	Zinc	Lead	Silver	Zinc
	Tons	Tons	Ounces	Tons	%	Ounces	%
1914–15	441,442	26,132	948,664	2,813	5.92	2.15	0.64
1924–25*	372,679	28,113	1,576,731	7,184	7.54	4.23	1.93
1929–30*	373,791	27,834	1,241,269	17,994	7.45	3.32	4.81

*Output of the Morning Mine only.

These production tables, particularly that for the Federal Mining & Smelting Co., also indicate the rapidly increasing importance of zinc production to mining operations in the district. The Morning Mine was responsible for a 2,000 tons *per annum* increase in zinc output between 1915 and 1924, and by the end of the 1920s production had climbed to 12,000 tons *per annum*. The Bunker Hill & Sullivan and the Hecla mines did not have anywhere near the same capacity from their own ores, but it was a desire to enter the lucrative zinc market that led to the joint promotion of the Sullivan Co. and the Star Mine project. By 1926, the new company was drawing 12,000 tons of ore annually along a 9,000 ft. cross cut and up the Hecla shaft. It was shipped to the Bunker Hill & Sullivan mill at Kellogg and the concentrate sold to the Vieille Montague Zinc Co. of Chenee, Belgium, for smelting. The company,

TABLE 5
AVERAGE ANNUAL LEAD AND SILVER PRODUCTION AT THE BUNKER HILL AND SULLIVAN MINES, 1921–23 AND 1928–30

Date	Tons of Ore Extracted and Processed	Tons of Concentrate Produced	Metal Content of Concentrate		Metal in Concentrate	
			Lead	Silver	Lead	Silver
			Tons	Ounces	%	Oz per ton
1921-23	424,960	76,835	31,465	1,176,945	40.9	15.3
1928-30*	452,977	80,008	39,073	1,764,533	48.8	22.0

*In 1930 4,565 tons of zinc were also extracted from the ore.

Source: Mineral Resources of the US, 1914–1930.

TABLE 6
OUTPUT OF THE HECLA MINING COMPANY, 1914–1930

Date	Ore Extracted	Concentrate and Shipping Ore	Concentrate and Shipping Ore as % of Ore Extracted	Metal Content of Concentrate and Shipping Ore		Metal Content of Concentrate and Shipping Ore	
				Lead	Silver	Lead	Silver
	tons	tons		tons	tons	%	%
1919	206,906	27,179	13.0	11,038	796,068	40.6	29.2
1921	267,825	39,974	14.9	17,472	1,060,139	43.7	26.5
1923	166,450	27,617	17.6	11,607	774,316	41.7	28.0
1925	331,840	58,447	17.6	24,453	1,531,793	41.8	26.2
1929	311,699	57,627	18.5	26,314	1,668,069	45.5	28.8

Source: Mineral Resources of the US, 1919–1929.

confident of the future of the operation, decided to build its own electrolytic smelter at Kellogg, at a cost of between $1.25 and 1.5 million. Construction began in July 1926, with a projected completion date of late 1927. It was designed by V.C. Tainton of the metallurgical staff of the Bunker Hill & Sullivan, an expert in electrolytic techniques. Tainton incorporated the latest methods, exploiting practical experience obtained at Trail in British Columbia and at Great Falls.

TABLE 7

TOTAL COSTS IN $ PER TON OF ORE MINED AT BUNKER HILL & SULLIVAN MINES, 1924–30

Date	Cost of Mining	Cost of Concentrating	Cost of Shipping	Other Cost	Total Costs
1924	3.43	0.87	0.06	0.23	4.59
1925	3.62	0.76	0.05	0.36	4.79
1926	3.19	0.70	0.04	0.21	4.14
1927	n.a.	n.a.	n.a.	n.a.	n.a.
1928	3.30	0.86	0.05	0.32	4.53
1929	3.81	1.10	0.05	0.36	5.32
1930	3.84	0.94	0.03	0.35	5.16

Source: Mineral Resources of the US, 1924–30.

Through 1927 and the early part of 1928, the Star Mine output was stockpiled ready for completion of the smelter, which was finally commissioned in June 1928. The first shipments of what were to become known in the trade as Bunker Hill brand slab were made in the following December, and the brand won instant acclaim for its exceptional purity. In its annual report for that year, the Bunker Hill & Sullivan directors expressed their delight at the results of the project, referring to the opening of the plant as 'an event of outstanding importance'. What pleased them so much was that increased revenues from zinc were 'due solely to better and more modern metallurgy and not to an increased amount of zinc in the ore'. They immediately began to investigate the possibilities of using the new and more efficient technology for the re-processing of old waste dumps.[23] The Hecla mine began to send ore to the new smelter, and even went to the lengths of unwatering some old workings to see if they contained workable quantities of zinc. In the event the search proved fruitless.

The Star Mine, for all its resounding success, did not quite leap to first place amongst Idaho's zinc producers. The Morning Mine continued to hold that distinction. However, in 1929 a massive increase in output raised the state as a whole to record levels of production. The Star sent 114,035 tons of ore to the Bunker Hill & Sullivan concentrator for separation by flotation into lead and zinc concentrates. The lead was then sent for reduction to the Bunker Hill & Sullivan Smelter at Bradley, and the zinc to the Tainton plant. Together they produced 3,961 tons of lead, 6,900 tons of zinc and 123,593 oz. silver. The total output of zinc from the Tainton smelter was considerably larger than this in fact, as it smelted considerable quantities of ore from other mines. For 1929 as a whole it produced 18,521 tons of slab metal. The very high levels of purity obtained enabled it to be sold at substantial premium prices over 'Prime Western' zinc. For most of the year fair profits were earned, notwithstanding the substantial initial outlays necessary to make the plant efficient.

From August 1929, however, sales slowed up sharply and prices began to decline, causing the company to report ominously at the end of the year that 'the operating profit disappeared, the net result of the year showing a loss, with a large stock of zinc on hand accumulated during the last few months of the period'. An advanced but still relatively high cost operation, initiated during the expanding, high price years of the mid- and late 1920s, was accordingly among the first to feel the pinch when the economy began the plunge into depression in the closing months of the decade. The gathering economic storm also hung over the Bunker Hill & Sullivan. The annual report for 1929 noted that profits for the year as a whole were good, but that prices had plunged downward during the last quarter. The company failed to appreciate the real significance of these events, expecting only a slight break in its prosperity and looking forward to 'a period of increased activity and greater earnings'.[24]

By the end of 1930, the depression was clearly beginning to bite with full force. The prosperity of the 1920s was not to be seen again for more than a decade. The average price of lead fell sharply from 6.3 cents per pound in 1929 to 5 cents in 1930, and the price of zinc fell even more disastrously, from 6.6 to 4.8 cents per pound. Bunker Hill & Sullivan complained of 'prices lower than our operations have heretofore known'.[25] Yet somehow the business managed to remain profitable; an achievement based at least partly on the increasing treatment of old tailings, yielding substantial quantities of lead and silver at low cost. There was a similar story at the Federal Mining & Smelting Co.'s Morning and Page mines. Production was severely cut back and earnings fell by over $1 million, yet further improvements were made in the grade of concentrates and the year ended without a loss. The annual report raised the prospect of a complete shutdown, but this was rejected because heavy fixed expenses would still have had to have been met.

Elsewhere the position was more serious. The Hercules Co., which had continued to operate its concentrating mill for other firms even after its own mine had been shut, was forced to close down completely. Similarly, the Sullivan Co.'s Star Mine, the great new hope of the late 1920s, at first sharply curtailed its output and then entirely ceased production in April 1930. The zinc smelting plant was reduced to treating ore from Bunker Hill, Hecla, and one or two smaller mines.

V

In a survey of the role of non-ferrous metals in industrial development, Lotte Muller-Ohlsen has rightly observed that 'the non-ferrous metals industry is indissolubly linked with the overall economic trend and with technical progress and its effect on the economy'.[26] Nowhere can this relationship be illustrated better than in the performance of the lead/silver/zinc mines of Idaho during the first three decades of this century. During that period world industrial production, led by the United States, increased nearly three times, based largely on the exploitation of new strategic technologies (such as electric power and the internal combustion engine) which were particularly large consumers of non-ferrous metals. This new demand was satisfied without a great increase in price by a massive expansion of mining activity worldwide, but particularly within the United States, where the comparatively small Coeur D'Alene district of northern Idaho made an important contribution. Although many important mines were developed in the district, by far the largest part of its output came from just four large companies, two of which ranked among the world's biggest mining enterprises.

The sustained dominance of these large companies was based not only on their control of the largest and richest lodes, gradually pieced together around the turn of the century, but also, as Barger and Schurr argued, on their ability to respond effectively to the challenge of mining at ever greater depths.[27] A clear illustration of the role of improved technologies in significantly reducing operating costs and increasing profit margins, is provided by Rickard in his history of the Bunker Hill & Sullivan enterprise. In this he demonstrates how the driving of the long deep Kellogg drainage and drawing adit, and its coincidental discovery of new ore deposits, reduced average working costs per ton of ore from $2.57 per ton in 1902 to $1.40 per ton in 1905, consequently more than doubling lead output and massively increasing operating profits.[28] Equally significantly, when the initial effect of the investment began to lose its momentum, and further technical and operational improvements had only a muted influence, operating costs again began to rise, more than doubling between 1905 and 1916, with a consequent reduction in operating profits.

Following this highly successful and profitable investment came a strategic innovation, this time increasing the value of the minerals produced rather than reducing operating costs. The introduction of differential flotation in the ore concentration process helped to create the foundations of prosperity at several mines in the mid-1920s. It permitted the easy and cheap separation of jointly occurring lead and zinc ores, enabling the companies not only to increase their income from the extraction and sale of the zinc, but also to increase the marketability of their lead ores.[29]

Although the changing fortunes and structure of Idaho lead/silver and later zinc mining have been the principal subjects of this article, it is hoped that it will draw more general attention to the much neglected subject of American metal mining. Notwithstanding the industry's significance as a major employer and source of profit, absolutely critical to the economic development of several large regions of the country and of profound importance to the whole process of industrialisation, it has received scant attention. It still has no general history, and receives at best a passing mention in the textbooks. Such scholarly neglect cannot be explained by a lack of archives or quantitative data. Indeed the industry is better documented than most, with a wealth of material, in private, state and federal hands, awaiting further investigation.[30]

University of Exeter

NOTES

1. These have been published in a continuing county series by the University of Exeter, 1981 following. They include: R. Burt, P. Waite, M. Atkinson and R. Burnley, *The Derbyshire Mineral Statistics, 1845–1913*; *The Yorkshire Mineral Statistics, 1845–1913*; *The Cumberland Mineral Statistics, 1845–1913*; *The Lancashire and Westmorland Mineral Statistics with the Isle of Man*; *The Durham and Northumberland Mineral Statistics*; *Devon and Somerset Mines*; *Cornish Mines*; *The Mines of Cardiganshire*.
2. *The Mineral Resources of the United States* was published annually by the US Geological Survey between 1844 and 1910 and after 1911 by the Bureau of Mines, Department of the Interior.

3 Detailed data was regularly collected from an early point by Federal offices but they were only permitted to publish it in aggregate form. It is probable that the original archive material of the Geological Survey and Bureau of Mines still survives in Washington.

4. C.J. Schmitz, *World Non-Ferrous Metal Production and Prices, 1700–1976* (1977), pp.92–105, 143–59, 182–94.
5. F.L. Ransome and F.C. Cathcart Calkins, *The Geology and Ore Deposits of the Coeur D'Alene District, Idaho*, United States Geological Survey, Professional Paper 62 (1908).
6. See J.R. Finlay, *The Cost of Mining* (New York, 1909), p.267.
7. Ibid., 1920 ed.
8. Idaho Inspectors of Mines, *12th Annual Report* (1910).
9. In the early 1890s, Coeur D'Alene concentrates assayed at around 60 per cent lead and 30 oz. silver to the ton.
10. Ransome and Calkins, *Coeur D'Alene District*.
11. In the early years of the twentieth century, Coeur D'Alene ores averaged less than ten per cent when they were drawn from the mines, and were dressed to 45 per cent concentrates. This compared with 68 per cent concentrates from Missouri and a national average of 55 per cent. See Finley, *Cost of Mining* (1920).
12. Idaho Inspectors of Mines, *2nd Annual Report* (1900) and *8th Annual Report* (1906).
13. Ibid., *8th Annual Report* (1906).
14. Finlay, *Cost of Mining* (1909 and 1920 eds.).

15. See John Fahey, *The Days of the Hercules* (Moscow, Idaho, 1978), pp.116–7.
16. Detailed returns for the mining companies, arranged by mine and by year, are available from the author.
17. *Annual Report of the Idaho Inspectors of Mines*, 1906.
18. See *Mineral Resources of US* (1916), p.595.
19. Ibid. (1920), Pt. 1, p.256.
20. Ibid. (1921), Pt. 1, p.47.
21. Ibid. (1923), Pt. 1, pp.398, 399, 402.
22. Ibid. (1925), Pt. 1, pp.542, 547.
23. Ibid. (1928), Pt. 1, pp.678, 684.
24. Ibid. (1929), Pt. 1, p.407.
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'COPPEROPOLIS': THE RISE AND FALL OF THE COPPER INDUSTRY IN THE SWANSEA DISTRICT, 1826–1921

By EDMUND NEWELL

The growth of the copper industry in the Swansea district during the nineteenth century was a significant industrial achievement of the period. From the late 1820s the industry, which had developed in the eighteenth century utilising copper ores mined in the British Isles, became the export market for most of the world's important and growing copper mining regions. This enabled the industry to expand still further and consolidate Britain's position as the world's largest producer of refined copper, a position retained until her output was overtaken by that of the United States in the 1880s.

The continued success of the south Wales smelters stemmed from their ability to tap the increasing supply of ore from a widespread group of overseas producers so as to meet the growing domestic and overseas demand for copper. Indeed, the smelters played a key demand-side role in the growth of the copper mining industries of Latin America, Australia, southern Africa, North America and elsewhere. However, it was the development of smelting and refining in these and other regions which led to a relative decline in British copper production from the 1860s, and an absolute decline from the late 1890s. This change in fortune for the Swansea producers was an early instance of a successful British industry being outcompeted in the expanding international commodity markets of the late nineteenth and early twentieth centuries.

In explaining the development of the south Wales copper industry, historians and geographers have placed much emphasis on the locational advantages the Swansea region possessed relative to other possible sites for smelting works, both at home and abroad. In particular, they stress the importance of Swansea's seaboard location and close proximity to the south Wales coalfield. This is not surprising. Best-practice smelting techniques before the 1880s required, on average, two tons of coal to smelt one ton of copper ore, coal accounting for about 45 per cent of total smelting costs.[1] It was, therefore, clearly advantageous to locate smelting works near to a supply of coal rather than a source of ore when coal and ore were not found together. And by making copper works accessible to shipping, the industry was able to benefit from the cheapest form of transportation for bulky goods such as copper ore.

This can be only a partial explanation of Swansea's success: geographic conditions do not create industries or trades, they merely provide certain parameters within which economic activity can take place. The development of the Swansea district into 'Copperopolis' hinged upon the introduction of specialised smelting and refining processes to best utilise south Wales coal, the improvement of port and shipping facilities to convert a small and primitive harbour into an international port, and good marketing strategies and changes in commercial policy to attract ore supplies to Swansea. Furthermore, it is clear that the south Wales industry benefited from its 'early start', for its attraction as an outlet for foreign ores was partly a consequence of the delay in establishing copper works overseas, nearer to the sources of ore.

Despite their importance in explaining the development of copper production in the Swansea district, these factors have received relatively little attention in the general studies of the industry.[2] Equally, the nature of the overseas competition and other possible contributory factors to the decline of copper production in south Wales have also failed to receive the degree of analysis they merit.[3] This essay will examine both the growth and the eventual decline of the copper industry of the Swansea district. It will consider the importance of technological, marketing and port-related factors, and will assess the impact of mining and smelting developments overseas, placing the rise and fall of the industry squarely within the context of changing international markets for copper and copper ore.

I

The roots of the Swansea copper industry can be traced back to the resurgence of British copper production in the late seventeenth and early eighteenth centuries, which saw a growing smelting industry gravitate towards the Swansea district and output increase from the developing Cornish mining industry.[4] With mining and smelting emerging in these places a close trading relationship was forged: ore was shipped across the Bristol Channel from Cornwall for smelting in Swansea, and coal provided a return cargo to be used to smelt tin and power steam engines in the Cornish copper and tin mines.

During the eighteenth century the Swansea smelting industry acquired many of the characteristics which were to be influential in its later history. Most importantly, what became known as the 'Welsh process' of copper smelting developed,[5] a process which was greatly influenced by local factors and which differentiated the Welsh-based industry from her European counterparts.[6] The Welsh process centred upon the use of the reverberatory furnace, which had been adapted for copper smelting in Bristol at the end of the seventeenth century.[7] This was an advance on existing direct-heat furnace technology because indirect reverberatory heating was better suited both to the use of coal as a fuel and to the reduction of sulphide ores, which were the main produce of British mines. The other important feature of the Welsh process was that it utilised a wide range of ores of varying chemical composition. Impurities such as oxygen, sulphur, iron oxide and quartz, which are present in different types of copper ore, operate as 'fluxes' and 'reducing agents' for each other, and will react and separate from copper if heated together. Preparing smelting charges by mixing copper ores containing the correct proportions of certain impurities both enhanced the quality of copper produced by ensuring that the impurities could be removed, and minimised smelting costs by eliminating the need to use independent fluxes and reducing agents.

The Welsh process developed as a series of separate operations carried out in specialised furnaces. It was profitable only if throughput was sufficiently large to generate economies of scale, and it required smelters to hold sufficient stocks of ores of varying types to ensure that furnace charges could be made using the optimal mixture of ores. These requirements made the Welsh process capital intensive relative to other forms of metal smelting and provided strong financial barriers of entry into the industry.[8] As a result, the Swansea smelting industry became probably the most highly concentrated major British industry in the eighteenth and nineteenth centuries. This industrial structure opened the possibility for both collusive activity and price warfare between smelting companies. In practice, both forms of conduct proved to be important features of the industry throughout its history.

Thus, by the beginning of the nineteenth century, a small number of Swansea smelting firms had developed into the world's largest and technologically most advanced copper industry. In achieving this they were particularly dependent upon Cornish mines which supplied the bulk of the ore being processed. Copper production was, therefore, a domestic matter, and the copper ore trade one confined largely to the waters of the Bristol Channel.

II

Until the late 1820s it was unusual for copper ore to be traded as a commodity; smelting overseas normally took place at or near a mine utilising local timber as fuel, and it was copper in its metallic state which was exported. The emergence of new mining industries and the resurgence of the old changed this practice. The extensive development of newly-discovered or previously underutilised deposits resulted in the substantial growth of the total world output of copper ore, but this increase in mine output was not matched by the development of associated smelting activity using new technology. For various technical and economic reasons, most smelting industries developed later than their associated mines.

The British smelting industry benefited directly from this lag between mining and smelting, becoming the principal export market for copper ore. The extent of the growth and the increasing diversity of sources of

British ore imports from the late 1820s are shown in Figure 1, together with the emergence from the late 1840s of the trade in 'regulus', or part-smelted ore, imported for further smelting and refining. It can be seen that until the mid-1860s imports of both ore and regulus were dominated by Latin American producers. Thereafter new exporters emerged, most notably British North America, southern Africa, Spain and Portugal, the latter two countries exporting large quantities of low-grade pyrites used for joint copper and sulphuric acid manufacture. Smaller quantities of ore and regulus were also imported from a wide range of minor producers in Sweden, Norway, Italy and elsewhere.

Two principal factors explain the take-off of ore exports in the 1820s. Firstly, informal British imperialism in Latin America following the break-up of the Spanish Empire led to the growth of British interest in metal mining in Chile and elsewhere. Secondly, new trade regulations provided strong incentives for overseas producers to export ore to Britain.

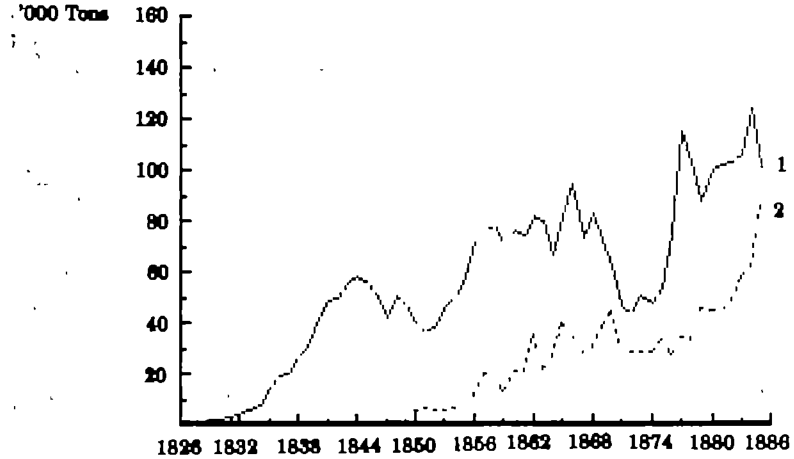
It is well known that with the removal of trade restrictions, and with growing confidence in the stability of the newly-recognised states, British merchants, in search of new markets, became quickly established in South America. In addition, these merchants sought to generate exchange by exporting domestically produced goods to Britain.[9] Metal mines were an obvious source of interest, initially through the attraction of gold and silver. News of the mineral wealth was transmitted to London, drawing the attention of speculators, a process which culminated in a major speculation boom in South American metal mines in 1824–25.[10] Although the bubble burst and many of the mining associations collapsed before even a hole was dug, a number of British companies survived by mining copper, which was found in abundance, rather than silver or gold.[11]

The stimulus for this activity did not come from within the Swansea smelting industry, as recently suggested,[12] or from any other similarly interested parties; the mining associations were formed at the behest of financial speculators attracted by precious metals.[13] Nevertheless, links between South American mines and British mining and ancillary industries developed, and skilled labour and equipment were exported to both British and South American-owned mines.[14] However, despite the growing interest in South American mining, the export of copper ores to Britain was effectively prohibited by a high tariff imposed during the Napoleonic Wars. A change in commercial policy was therefore required to make Britain a viable export market for copper ore.

It has been stated that Huskisson's tariff reforms of 1825 provided mining companies with the incentive to export ore to Britain.[15] This was not so. Despite being almost halved, specific duties on ore were left equivalent to a prohibitively high *ad valorem* rate of nearly 150 per cent of the prevailing price of ore in Britain. The incentive came instead from the 1827 Customs Act, which enlarged the range of goods which

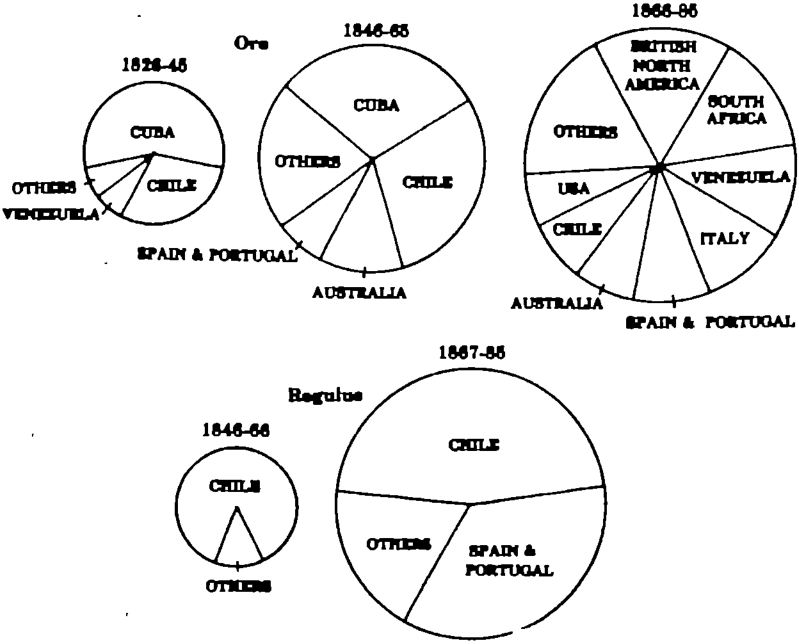
FIGURE 1

IMPORTS OF ORE AND REGULUS INTO BRITAIN, 1826–1885



1. Ore 2. Regulus

Note: These quantities not adjusted to allow for the differing copper contents of ore and regulus.



Source: British Parliamentary Papers, *Accounts and Papers* (1826–7 to 1886).

could be imported free of duty for subsequent re-export to include copper ore, thus opening the door for foreign ore to enter Britain. Crucially, this Act permitted the practice of 'smelting in bond', whereby copper ore imported free of duty could be processed in Britain and re-exported in the form of copper.[16] In association with this the copper ore trade became exempt from the Navigation Laws, because copper smelted in bond was produced for overseas markets rather than home consumption. As such, copper ore could be imported in vessels of any nationality.[17]

Following the speculation boom, informed parties feared that Huskisson's substantial reduction of duties on copper would lead to an influx of *metal* rather than ore into Britain.[18] This did not occur. Had it done so, the development of the Swansea copper industry would have been markedly different from that which followed. These fears were misplaced not because attempts to increase domestic smelting capacity in South America were not made, but because technical smelting problems combined with the economic backwardness of the new South American states led to a long lag between the expansion of domestic copper mining and the successful development of a substantial coal-based smelting industry.[19]

Existing smelting methods in South America were primitive, on a small scale, high in timber consumption, and produced poor quality copper. Furthermore, they were suited to the reduction of oxide ores alone and not sulphide ores, which were present in abundance but left as waste because of the difficulty of smelting them – a practice which surprised British miners on their arrival, according to Charles Darwin.[20] In contrast, smelting technology in Britain and the continent was far more advanced.[21] In Scandanavia and Germany, where timber was found near mines, wood-burning blast furnaces had been developed to reduce oxide and sulphide ores to produce high quality copper, and in Britain the relatively advanced Welsh process of reverberatory smelting was employed using coal. Even with the additional cost of transporting copper ore to Britain, British smelters held a comparative advantage over their South American counterparts. For smelting in South America to become internationally competitive, new methods, equipment and skilled labour had to be imported, and a far greater smelting capacity had to be created. Before this could happen, technical problems relating to the reduction of sulphide ores had to be overcome, sufficient capital had to be raised to finance the industry, and internal transport had to be improved to reduce the cost of bringing ore and fuel together. London-based mining companies believed that an export of equipment and injection of capital would quickly solve these problems; instead, they persisted until the 1840s.[22]

In the meantime, expansion in mining took place as a result of favourable demand-side conditions in the export market. With British merchants in South American ports actively seeking goods to export to

Britain, and with favourable commercial policies which encouraged the import of ore into Britain, Swansea was an obvious outlet. Here a large smelting capacity existed, and the town's seaboard location meant that the works could be reached by ship, avoiding inland transport costs.[23] Furthermore, existing marketing procedures were ideally suited and attractive to new suppliers seeking an outlet for their ore. Public sales of ore by tender, known as 'ticketings', were held fortnightly in Swansea at which merchants or mining companies were free to put up ore for sale.[24] This method of selling ore had been used in Cornwall since about 1725 and was introduced in Swansea on a regular basis in 1805 for the sale of other British and Irish ore.[25] It had developed largely because it enabled smelters to obtain a wide range of ores for mixing together, as was required in the Welsh process. For mining companies and merchants this system was favoured because it was seen as being competitive and therefore likely to ensure that ore sold for the maximum market price (although, in practice, price-rigging between smelters was not uncommon).

For these various reasons, smelters in the Swansea district were in a strong position to obtain ores from the expanding copper mining industries of Latin America in the late 1820s and early 1830s. However, despite the advantages associated with its early development, the future of the south Wales industry depended upon the ability of her smelters to compete for supplies of ore as smelting industries developed on Merseyside and elsewhere. The first difficulty to arise in this respect was the relative provision of port facilities and freight costs incurred in trading with competing ports.

III

An investigation of the relationship between the industry and the port of Swansea reveals a number of problems which were the result of, or were compounded by, the expansion of copper production in the district. In addition to the physical constraints of the harbour, it is apparent that the port and customs authorities and those responsible for framing legislation relating to the copper ore trade were unprepared for the trade's growth, or ignorant of the specific requirements of the copper industry. These latter difficulties persisted until free trade was established with the abolition of the Navigation Laws in 1849[26] and the removal of import duties on ore in 1853.

Swansea's physical problems were to some extent the result of the unusually large tidal variations experienced by all Bristol Channel ports, which limited access and imposed constraints on the size of vessels that could enter and leave at certain times. Delays in getting a ship in and out of port could result in demurrage charges being incurred and increased the opportunity cost of trading with a port, since potential earnings were lost when time was wasted. Furthermore, before docks were constructed in Swansea, ships were forced to lie aground at low water, risking damage to those loaded with heavy cargoes such as copper ore.

These issues were of concern long before the emergence of the international ore trade, but improvements were slow in coming.[27] The only substantial harbour development completed in the first half of the nineteenth century had been the construction of piers and a lighthouse and the deepening of the river-channel, which was finished by 1809. It was to be another 43 years before the next improvement, the North Dock, was opened. In the meantime, existing problems were exacerbated by the unexpected transition of the copper industry from one almost totally dependent upon domestic supplies of ore to one which utilised imported ores in substantial quantities. Until then, Swansea had been a typical small Bristol Channel port serving the coasting trades, providing little more than basic harbouring facilities. The arrival of larger ships employed in the international ore trade increased the physical problems of the port: they were at greater risk of damage from lying aground and were even more restricted in the periods in which they could enter and leave the harbour. In addition, customs authorities were ill-prepared for the increase in the number of vessels dealing with international trades, which resulted in further delays in turn-round as ships were detained until their cargoes were inspected.[28]

These were not the only difficulties faced. Whilst the changes in commercial law provided a general stimulus for the growth of the trade by permitting smelting in bond, the small print of the legislation proved inappropriate to Swansea's particular needs. A recurring problem was the incompatibility of the Navigation Laws and Warehousing Acts with regard to Swansea and the ore trade. The reason was as follows. Goods not exempt from the Navigation Laws could be unloaded in a British port from foreign or British registered ships only if that port was legally permitted to deal with those goods and the goods were stored in bonded warehouses for subsequent re-exportation, or, in the case of British vessels, on payment of duty. Otherwise, the goods had to be removed to a port where these facilities were available. Thus the status of a port under the Warehousing Acts could influence the types of trade which took place within it. Because it was a port dealing primarily in coasting trades, Swansea was granted limited provisions for bonding goods under the early Warehousing Acts. Wood goods were allowed to be stored in bond, wines and spirits were permitted until 1828, copper ore was allowed from 1827, and corn was included at a later date. This small range of goods was in marked contrast to larger ports. In Bristol, for instance, all except generally prohibited goods could be bonded, and in Liverpool the list was almost as extensive.[29]

The limited provision for bonding goods in Swansea provided a number of problems for ore-carrying vessels trading directly with the port. Whilst the exemption of the copper ore trade from the Navigation Laws attracted foreign shipping into this trade, constraints were then imposed – if the ships carried mixed cargoes – by the restrictions on warehousing and by the imposition of the Navigation Laws on the other goods on board. This affected merchants seeking outward freight, since the limited range of foreign goods warehoused in Swansea for re-export increased the difficulty of securing full cargoes unless coal, which was readily available, was in demand. It also hindered inward trade. The Swansea customs records provide a number of cases when masters of vessels bringing ore to Swansea were not allowed to land the rest of their cargoes because the vessels were not from the country of origin of the cargoes.[30]

To shipowners and merchants engaged in international and entrepôt trades, Swansea was an unattractive port to deal with – at least in the formative years of the international ore trade – because of the limited opportunities for discharging mixed cargoes and obtaining outward freight. There was a clear inconsistency in the legislation covering warehousing in Swansea: on the one hand it encouraged the development of a specialised trade in copper ore to the benefit of local industry, but on the other hand it left awkward restrictions which hindered the trade in other respects.

The arrival of free trade eliminated the difficulties associated with trade legislation, but the physical problems of the port and the limited provision of exportable goods remained. The completion of the North Dock in 1852, the South Dock in 1859 and the Prince of Wales Dock in 1881 increased the port's capacity, but this development was slow and lagged behind the growth of the port's trade.[31]

These various difficulties caused a diversion of direct trade away from the port and encouraged the practice of importing ore into other British ports and then trans-shipping it to Swansea.[32] London became the main trans-shipment port for the Australian ore trade, and significant quantities of ore were trans-shipped from Southampton and Bristol. The most important trade, however, was between Liverpool and Swansea. An important copper smelting industry was located on Merseyside, but much of the copper ore which arrived in Liverpool was not smelted locally but sent to Swansea. As a port, Liverpool held several advantages over Swansea: it had established trade links with Latin America; a wider range of goods could be kept in Liverpool's bonded warehouses; return cargoes were more easily secured, and its facilities were better suited for dealing with large vessels.

There were, of course, disadvantages in trans-shipment. It incurred additional freight costs, handling costs, port dues and warehousing charges, and required further supervision by customs officials. An estimate of the difference in shipping ore direct from South America to Swansea and via Liverpool in the 1840s suggests that trans-shipment costs reduced the ore exporters' revenue by 11 per cent,[33] indicating the existence of a significant disincentive to trade directly with Swansea. However, since smelting also took place near Liverpool, the existence of this trans-shipment trade also suggests that there were strong financial advantages in selling ore in Swansea rather than to Merseyside smelting companies.

Ironically, the problems of obtaining an outward cargo at Swansea were reduced as coal smelting was introduced in several of the overseas mining regions which exported ore to Britain. The most important case was Chile. Here a symbiotic trade of ore in, coal out developed. Swansea coal was exported and mixed with poorer quality Chilean coal and used to produce regulus and unrefined copper which was shipped to Swansea for full smelting and refining.[34] In this way the problem of securing outward cargoes was removed, freight rates on the Swansea route were lowered, and trans-shipment decreased. This trade in coal may have benefited the Swansea copper industry in the short run, but the growth of smelting overseas with which it was associated had serious long-term implications.

IV

Favourable market conditions from the late 1840s to the early 1860s made these successful years for the Swansea copper industry. With both the demand for copper and the supply of domestic and imported ore and regulus increasing, smelters enjoyed a period of sustained profitability and expansion. However, the seeds of the industry's decline were also sown at this time. It has been suggested that changes in commercial policy in 1842 and the presence of a British smelters' cartel from 1844 to 1867 encouraged the development of smelting overseas,[35] whilst a series of technological improvements began to alter the economics of smelting to the advantage of overseas producers. Although the output of copper from the Swansea district continued to grow, relative decline had set in by the late 1860s with the impact of foreign competition keenly felt in both domestic and export markets.

Peel's budget of 1842 abolished the provision of duty-free smelting in bond for the production of copper for the export market, but in compensation reduced the import duty on copper ore to the extent that it no longer prohibited the import of ore for the manufacture of copper for the domestic market. However, following a fall-off in ore imports in the mid-1840s, merchants and industrialists proved successful in convincing parliament that the net effect of the new commercial policy was to discourage overseas producers from exporting ore to Britain whilst encouraging the establishment of smelting works in Europe and the Americas. As a result, import duty on copper ore was reduced to a nominal level in 1848 and abolished in Gladstone's budget of 1853.[36]

A recent study has questioned whether commercial policy did provide exporters of ore with a disincentive to trade with Britain.[37] Whilst it is clear that the ending of smelting in bond had a depressive effect on supply of ore for the British export trade in copper, the overall lowering of duties increased the demand for foreign ore for the manufacture of copper for the domestic market. Theoretically, the net effect of these shifts in supply and demand is ambiguous and depends upon the size of the shifts and the relative elasticities of supply and demand functions. Empirically the evidence available is inconclusive, but it suggests that contemporary politicians may have been misled into making a simple conclusion about the effect of the import duty on the ore trade because they failed to take into account the impact of important factors which affected the ore market at the same time, in particular the market operations of the south Wales smelters.

Concentration in the copper smelting industry had increased to the extent that by the early 1840s the four largest firms accounted for over 70 per cent of ore purchases.[38] This market structure led to a text-book instance of oligopolistic behaviour. In 1842 a new firm, the English Copper Co., entered the industry – a move which provoked a severe price war. Cut-throat competition between smelters failed to force the new entrant out of the market. Instead, this period of loss-making led to the formation of a secret cartel, the Copper Trade Association, in 1844 to restore profitability to the industry.[39]

It would seem that the principal long run objectives of the cartel were to prevent price fluctuations in a normally volatile market and to maintain a small but constant differential between the prices of ore and copper. However, during the first five years of its operation, when the debate over commercial policy was at its height, the cartel generated supernormal profits by driving a large wedge between the prices of copper and ore.[40] There are indications that this behaviour and the very existence of a cartel exercising price control may have hastened the development of smelting overseas. Even without information as to the extent to which the cartel exercised its market power, the recognition of price manipulation made Swansea smelters unpopular with mining companies at home and abroad. For instance, when copper was first successfully smelted in Australia the *South Australian* newspaper carried the headline 'Swansea copper monopoly defeated',[41] whilst the Chilean newspaper *El Ferrocarril* accused the smelters of 'abusing the dependence in which the sellers [mining companies] find themselves'.[42]

Whether or not hastened by the effect of commercial policy and/or the cartel, changes in methods of copper production started to take place at home and abroad which led to the relative decline of copper production in the Swansea district. The first evidence of this was the growth of Chilean regulus production, exports of which began to erode the country's ore trade from the late 1840s. As coal became readily available in Chile through the growth of the return trade in coal from Swansea and the development of a domestic coal mining industry, it was realised that savings in transport costs could be made by reducing the bulk of waste prior to export by basic coal smelting, converting ores of 15 to 20 per cent copper to regulus of 40 to 60 per cent copper.

Shortly after the emergence of the regulus trade, unrefined Chilean copper also began to be exported to Britain. Together, the development of smelting and part-smelting in Chile reduced the country's ore exports to minimal quantities by the late 1860s (by which time unrefined copper had overtaken regulus as Chile's main export). It had, however, taken Chilean smelters decades to create a domestic industry with a sizable capacity,[43] and even then it was unable fully to capture the country's mine output, and substantial exports of regulus continued to be sent to Britain. In other countries the development of smelting was even slower.[44]

The delay in the take-off of smelting overseas and the way in which the production of regulus preceded that of unrefined copper reflects partly the advantage established smelters in Swansea held over infant industries in full smelting and refining. Aside from difficulties in raising capital and providing adequate transport facilities, prospective smelters faced two fundamental technical problems which Swansea-based smelters had overcome: the first was the inability to obtain a sufficient variety of ores to minimise fuel costs and produce good quality copper when treating principally sulphide ores, the second was the high cost of fuel in the latter stages of smelting.

The economic differentiation of the production of regulus, unrefined and refined copper becomes apparent when the comparative costs of the three processes are considered. The accounts for Vivian & Sons' Hafod works show that the cost of reducing one ton of ore of 10 per cent produce to regulus of 50 per cent produce using the Welsh process was about only 30 per cent of the cost of fully smelting and refining one ton of ore to copper, or 40 per cent of the cost of producing unrefined copper. Refining was the most costly of the various reduction processes – over 28 per cent of total costs – requiring a large amount of fuel to remove relatively small quantities of impurities.[45]

As well as its low fuel requirement, regulus production (which was essentially the burning-off of volatile materials such as sulphur and arsenic) was far less capital-intensive than the manufacture of copper. Preliminary smelting could be conducted using the most primitive furnaces, whilst, in contrast, the full reduction of sulphide ores was technically difficult, and, to be conducted on a scale sufficiently large to produce refined or unrefined copper competitive in the international market, required sophisticated and costly equipment. This, too, delayed the successful introduction of smelting overseas, particularly in countries where sources of investment capital were scarce.

A third important change in this period was the development of copper production from pyrites, a low grade ore worked for the joint extraction of sulphur and copper. Although less significant in terms of its contribution to world copper output, pyrites processing provided a new branch to the copper industry and created links with the chemical industry, a development which resulted in a shift of British copper production away from Swansea.

Considerable interest had been shown in the extraction of sulphur from copper ores from 1838, the year in which a French sulphuric acid manufacturer was given monopsonistic control over the entire output of the Sicilian brimstone industry – Britain's principal supplier of sulphur. The resulting hiatus in the sulphur trade caused a sharp rise in the commodity's price and stimulated interest in the recovery of sulphur from cupreous pyrites – a potential substitute for brimstone as a source of sulphur, but previously unused because of technical problems and high extraction costs.[46] Although the monopsony was abolished in 1842, money was sunk in developing new extraction processes and chemical works quickly developed methods to produce sulphuric acid utilising pyrites obtained from Cornwall and County Wicklow.[47]

Because of its low copper content, pyrites was not normally purchased by copper smelters. However, sulphuric acid manufacturers were interested in the recovery of copper as a by-product from burnt pyrites, although it was not until the following decade that this became commercially viable. In 1853 William Henderson patented a method for extracting copper from the cinders produced in processing cupreous pyrites for sulphuric acid manufacture, which he employed at his Cornwall & Devon Sulphuric Acid Co. works near Llanelli.[48] This process was soon introduced at works in St. Helens[49] and on Tyneside.[50] In 1865, an improved wet method patented by Henderson was used in newly constructed works at Hebburn-on-Tyne, and following this advance copper extraction became a common feature of sulphuric acid manufacture.[51]

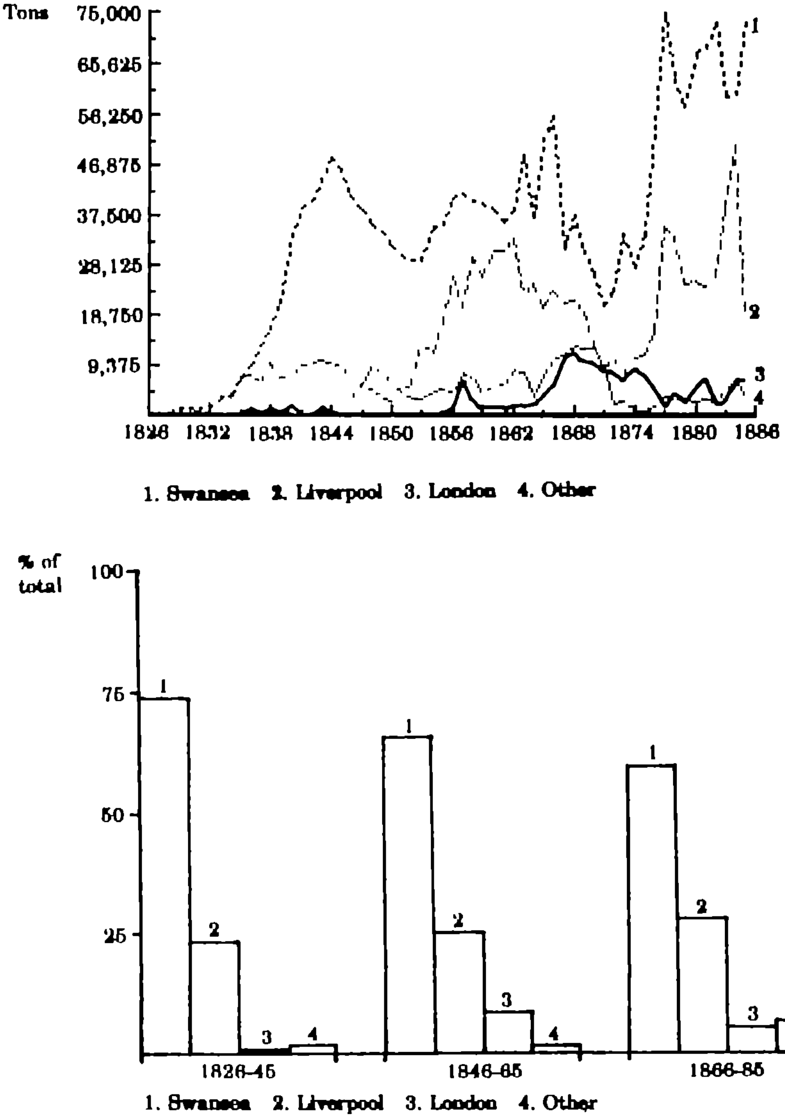
On the supply side, the increased use of this new method of copper production owed much to the development of open-cast pyrites mining in Southern Spain and Portugal by the British Rio Tinto and Tharsis companies from the 1860s, which became the main suppliers of pyrites to the British chemical industry.[52] With the expansion of the trade, new copper producers emerged in areas where the chemical industry was growing – particularly St. Helens, Glasgow, Tyneside, and Widnes – where a substantial proportion of British copper was produced by the end of the century. Data for 1869, for instance, show that 7,600 tons of copper were produced from burnt ores in alkali works that year,[53] in comparison to an estimated 22,000 tons produced by conventional methods in Swansea.

The impact of the growth of this new form of copper production on the distribution of copper production in Britain is indicated in Figures 2 and 3, where the rapid growth of the regulus trade into Liverpool and elsewhere was largely due to the development of pyrites regulus processing.

V

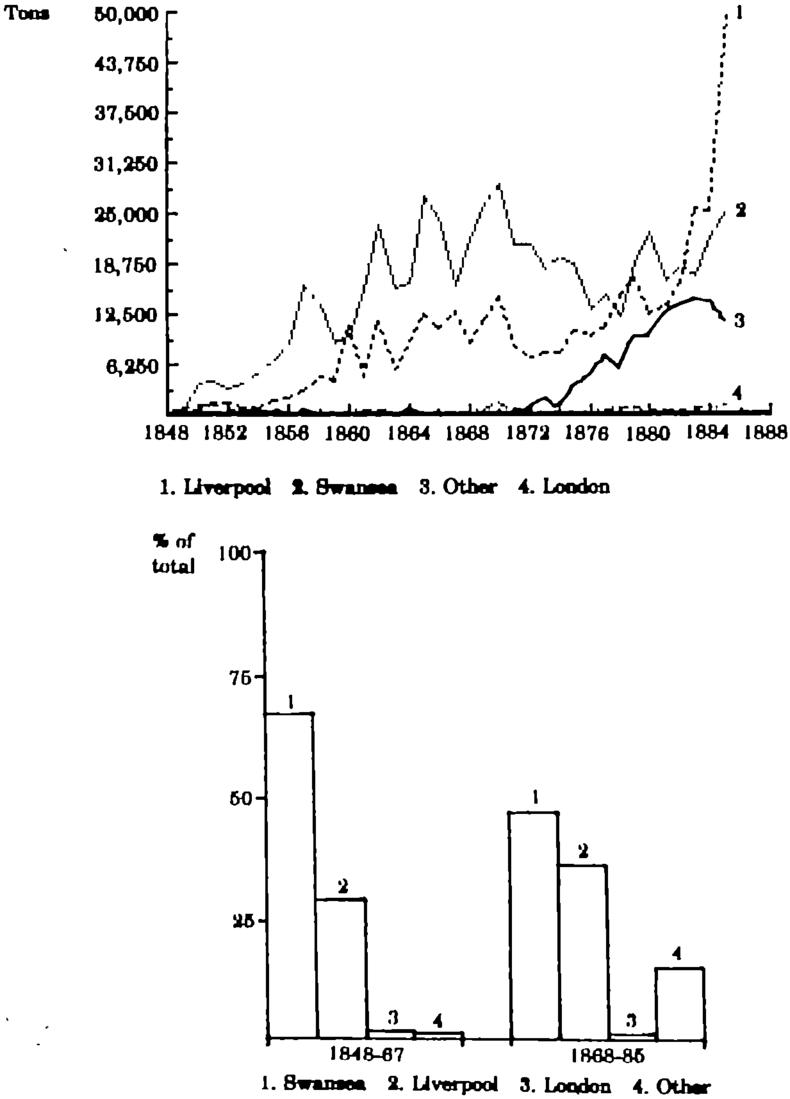
By the 1860s a number of important changes were taking place which were altering the patterns of international trade in copper and ore. Whilst Swansea remained the principal destination for regulus, the expansion of overseas smelting and the interlocking of markets had begun to erode the international importance of the Swansea industry as

FIGURE 2
COPPER ORE IMPORTS BY PORT, 1826–1885



Source: British Parliamentary Papers, *Accounts and Papers* (1826–7 to 1886).

FIGURE 3
REGULUS IMPORTS BY PORT, 1848–1885



Source: British Parliamentary Papers, *Accounts and Papers* (1849 to 1886).

a smelter of untreated ore, and had reduced the control which the Copper Trade Association was able to exercise over prices. This growth in international competition was evident in the now unprotected British market. Although Britain remained a net exporter of copper, the ratio of exports to imports fell sharply from 4:1 to 1857 to 1.3:1 in 1867.[54] This was caused primarily by an influx of unrefined copper from Chile. The increasing international supply of copper forced down the price of the metal, and being unable to arrest this decline, participants in the Copper Trade Association broke ranks to undercut competitors who were capturing a growing share of the market. In doing so the trade agreement became inoperative, resulting in the break-up of the cartel in 1867.[55]

The collapse of the Trade Association removed a major cause of concern from the Cornish mining industry, which had faced falling prices for a decade and which had placed much of the blame for this on the south Wales smelters (who held monopsonistic control over Cornish output). However, within a year the price of ore in the open market fell below the crucial break-even point of profitability, causing several hundred Cornish mines to be closed.[56] The Cornish industry had faced a number of difficult periods in the past, but unlike previous crises no recovery was forthcoming. The problem was not a cyclical fluctuation or short-term market shock but was deep-rooted in the changing nature of the market: the world supply of the metal was increasing – despite falling prices – to depress further the price of ore in the unprotected British market. The Cornish industry was not alone in its decline and many Cuban and Chilean mines were also closed, further depriving the Swansea smelters of ore supplies from established sources.

The closure of these mines hastened the shift in the balance of power beginning to take place between copper production in Britain and the United States. Whereas the traditional suppliers of ore to Britain faced economic exhaustion, copper mining in the United States was growing apace with the opening of the Calumet, Hecla, Anaconda and Butte mines in the 1860s and 1870s.[57] At first, the richer Butte ores were exported to Britain for smelting along with regulus produced at the other mines, where the ores were of too low a copper content to be economically transported in their primary state.[58] However, the trade in both ore and regulus was soon to diminish as significant technological advances were made in American copper production in the 1880s and 1890s.

Copper was known to exist in America in large, shallow, low grade deposits which could be excavated relatively cheaply because of low drainage and haulage costs. Unlike the low grade Rio Tinto ores, these ores were not suited to hydrometallurgical treatment.[59] American producers therefore placed particular emphasis upon developing low cost pyrometallurgical methods to make the production of copper from such ores profitable. This was achieved by the introduction of improved ore preparation techniques (which produced high grade concentrates from low grade ores relatively cheaply),[60] by improved furnace technology, including the adaptation of the Bessemer process for copper smelting, (which reduced unit smelting costs and eliminated the necessity to mix ores), and by the use of high capacity furnaces, (which generated substantial economies of scale).[61] At the same time, and in contrast to its British counterpart, the American copper industry benefited from a high degree of tariff protection.[62] Without the problems of having capital tied up in, and a labour force skilled in, old technology, and with the benefit of protection, American producers were in a favourable position to exploit this new technology to the full.

In making the extraction of copper from low grade ores economically viable, the new technology altered the fuel to ore ratio to the extent that transport costs were minimised by bringing fuel to the source of low grade ores (although it remained cheaper to transport high grade ores to a supply of coal). This change in the economics of ore processing, together with the fact that it was not necessary to mix a variety of ores, provided strong incentives for the vertical integration of mining and smelting and discouraged the exportation of low grade ores to smelters based in coalfields.[63] This was to be an important feature of the development of the copper industry in this period.[64] Furthermore, British-based smelters could not reverse the comparative advantage gained at vertically integrated works overseas by the introduction of similar methods to process low grade ores at home, since increased efficiency could not alter the fact that the fuel to ore ratio would always favour on-site processing.

With strong incentives for American producers to introduce new production methods, technological divergence between the south Wales and American industries was inevitable. Whereas the United States industry developed around metallurgical processes which favoured the on-site large scale smelting of low grade homogeneous ores, Swansea's future as a centre for smelting rested upon her continuing ability to attract high grade sulphide ores which could not be fully smelted more cheaply at the mine and which required mixing with other ores for efficient reduction. This divergence in production methods affected trade between mining and smelting industries. For instance, data for Newfoundland production show a distinct division of exports between high grade ores, which were shipped to Swansea for smelting and refining by the Welsh process, and low grade pyritic ores, which were sold in New York to be smelted using American methods.[65] Similarly, British trade statistics (reproduced in Figures 2 and 3) show that regulus (much of which was low grade burnt pyrites) increasingly entered ports other than Swansea where joint sulphuric acid and copper production took place. This was in contrast to the import trade in ores, which continued to be dominated by Swansea.

By the 1870s the long term future of smelting in south Wales was uncertain as supplies of sulphide ores from established sources were running out and the price of copper continued its downward trend. The survival of smelting in the region in the short term was secured following mining booms in Newfoundland and southern Africa, which provided substantial supplies of high grade sulphide ores. Furthermore, smelters were able to counter falling copper prices by employing new technology to diversify production to include the profitable exploitation of by-products from sulphide ores such as sulphuric acid, superphosphate fertilizers, arsenic, cobalt, antimony and nickel, and smelt zinc to mix with copper to produce brass.[66] Neither, however, were able to prevent a slow but steady decline of ore smelting in south Wales in the 1880s and 1890s. Until 1900 reduced ore supplies were more than compensated for by increased imports of high grade regulus,[67] such that output of copper from the Swansea region continued to increase. Thereafter both ore and regulus imports fell sharply, causing a rapid decline in the output of copper to the extent that copper smelting in the Swansea district was only a minor activity by World War One and had ceased by 1921.[68]

This significant change in the fortune of the south Wales industry from the turn of the century has been attributed to the growth in competition from American smelters.[69] This, in part, may be a consequence of the growth of American involvement in South American copper mining, and the associated development of strong trading relationships within the Americas. It was also the result of the widespread adoption of Bessemer converters which enabled blister copper to be manufactured cheaply on the spot, thus eliminating the cost-reducing advantages of exporting regulus.

VI

Unlike smelting, the refining of copper continued to take place in the Swansea district, albeit on a very small scale, until after World War Two. This was due partly to the fact that high fuel consumption ensured that there was no switch of comparative advantage of fire-refining to on-site works. It was also due to the high capital and running costs incurred in the newly-developed electrolytic refining process. The high costs associated with this process made companies wary of establishing refining works when it was possible to have copper refined elsewhere,[70] and discouraged vertical integration in refining since electrolytic refining could often be conducted at lower costs nearer to supplies of fuel for generating electricity. As such, independent refining works located near to markets for copper were able to survive at a time when mining and smelting were increasingly conducted in tandem.[71] Nevertheless, technological advances did have an effect on the location of copper refining works, and it was new technology together with the increased availability of cheap coal elsewhere which underpinned the slow decline of refining in south Wales.

Interest in new refining techniques stemmed from the well known fact that existing methods left traces of precious metals in copper. The recovery of precious metals from copper ore had long exercised the minds of smelters, but the mid-nineteenth century witnessed renewed interest in Britain owing to the arrival of gold- and silver-bearing copper ores from South America. Advances in the recovery of precious metals were made initially using the Welsh process,[72] but the most significant advance came with James Elkington's 1865 patent for the electrolytic refining of copper,[73] first used commercially at Elkington's works in Pembrey in 1869. This not only allowed precious metals to be recovered economically and efficiently, but it provided a means of producing very pure copper with a high electrical conductivity. Such metal was in growing demand from the expanding electrical industries for which fire-refined copper was too poor an electrical conductor.

Despite this advance in refining technology, three factors ensured that fire-refining remained an important process in the manufacture of copper. Firstly, there was no need to refine electrolytically copper which did not contain precious metals and which was not to be used in the electrical industry. Furnace-refined 'tough' and 'best selected' grades remained in demand for industrial use. Secondly, it was soon discovered that the electrolytic refining of blister copper was excessively costly because impurities in the metal interfered with the refining process. It therefore became normal practice to fire-refine blister copper before electrolytic refining. And thirdly, metal which had been electrolytically refined was not normally sufficiently malleable for industrial use. Consequently, it became common for electrolytically refined copper to receive further fire-refining.[74] Fire-refining therefore remained both an alternative and complementary process to electrolytic refining.

Although electrolytic methods were employed in Britain from an early date, increasing international competition from American producers in the supply of 'high conductivity copper' in the early twentieth century led many British producers to abandon high-cost electrolytic refining[75] and specialise in producing fire-refined copper for brass manufacturers and the engineering and shipbuilding industries.[76] This specialisation ensured the survival of copper production in Britain, though it necessarily geared the industry to supply a relatively small market, given that by this time over two-thirds of all copper produced was consumed by the electrical industries.[77] However, with the growth in the production of copper using the wet process in Lancashire and elsewhere and with cheap coal readily available in industrial areas throughout Britain, it became increasingly common for refining to take place at the new centres of copper production and for manufacturers to by-pass independent refiners and install their own refining works utilising imported blister copper.[78] This, too, contributed to the shift of copper processing away from south Wales.

VII

A significant development in the history of the Swansea copper industry in the nineteenth century was the industry's association with mining overseas. At first this led to an increase in the volume and diversity of ores available to British smelters, developing Swansea into Copperopolis – the centre of an important international industry. In doing so, a small Bristol Channel port was converted, with some difficulty, into one with trading connections across the globe. During the second half of the century the emergence of overseas producers significantly altered the pattern of trade in ore and led to a relative and then absolute decline in copper production in Swansea: first in the smelting of ores, then in the smelting of regulus, and finally in the refining of copper. Underlying the decline was the erosion of Swansea's comparative advantage as a site for copper production as new technology increasingly favoured the processing of the metal near to the supply of ores rather than fuel. Within Britain, the relative importance of the Swansea district as a centre for copper production was further diminished by the increased output of copper as a by-product of sulphuric acid manufacture from pyrites in Lancashire, Tyneside and Scotland.

In spite of the criticism that smelters failed to adopt new technology[79] or the suggestion that entrepreneurship within at least one smelting dynasty had waned by the third or fourth generation,[80] it appears that the south Wales smelters' loss of national and international competitiveness in both the ore and copper markets was largely the consequence of economic factors beyond the control of management. Inasmuch as the industry's decline was the result of supply side effects reinforced by the removal of tariff protection, it is more akin to the depression in arable farming in the 1880s than to other industries where the culpability of managers as poor decision makers remains a possibility. Whilst secondary questions remain concerning the response of south Wales copper producers to adverse market conditions (such as Vivian & Sons' failed attempt to establish works near the source of copper-nickel ores in Canada),[81] the industry's demise may otherwise be isolated from the broader debate of entrepreneurial performance and the decline of British industry from the late-Victorian period.

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NOTES

1. Derived from National Library of Wales (hereafter NLW), Vivian Papers E18, Hafod Smelting Charges.
2. For instance, D.T. Williams, *The Economic Development of Swansea and of*

the Swansea District to 1921 (Cardiff, 1940), Ch. 3, Pt. 1; R.O. Roberts, 'The Smelting of Non-Ferrous Metals since 1750', in A.H. John and G. Williams (eds.), *Glamorgan County History*, Vol. 5, *Industrial Glamorgan*, pp.47–95; and R.R. Toomey, *Vivian and Sons, 1809–1924: A Study of the Firm in the Copper and Related Industries* (New York, 1985).

3. As demonstrated in C.E. Harvey, *The Rio Tinto Company: An Economic History of a Leading International Mining Concern, 1873–1954* (Penzance, 1981), pp.152–9.
4. See, for instance, H. Hamilton, *The English Brass and Copper Industries to 1800* (1926), Ch. 4; R. Jenkins, 'Copper Smelting in England: Revival at the End of the Seventeenth Century', *Transactions of the Newcomen Society*, Vol. 24 (1943–44, 1944–45).
5. For details see: J. Percy, *Metallurgy: Fuel; Fire-Clays; Copper; Zinc; Brass, etc.* (1861); J. Napier, 'On Copper Smelting', *The London, Edinburgh and Dublin Philosophical Magazine*, Vol. 4 (1852) and Vol. 5 (1853); J.H. Vivian, 'An Account of the Process of Smelting Copper as Conducted at the Hafod Copper Works', *Annals of Philosophy*, Vol. 5 (1823); R.R. Tylecote, *A History of Metallurgy* (1976), pp.128–33.
6. H.C. Strom, 'Parallel between the British and the Continental Methods of Copper Smelting', *Mining Review*, Vol. 7 (1835).
7. R. Jenkins, 'The Reverberatory Furnace with Coal Fuel', *Transactions of the Newcomen Society*, Vol. 14 (1934), pp.71–3.
8. R.O. Roberts, 'Enterprise and Capital for Non-Ferrous Metal Smelting in Glamorgan', *Morgannwg*, Vol. 23 (1979), pp.48–50.
9. For instance, D.C.M. Platt, *Latin America and British Trade, 1806–1914* (1972).
10. M.J. Fenn, 'British Investment in South America and the Financial Crisis of 1825–6', (Unpublished M.A. thesis, University of Durham, 1969), p.25ff; L.H. Jenks, *The Migration of British Capital to 1875* (1938), pp.52–57.
11. J.F. Rippy, *British Investments in Latin America, 1822–1949* (Minneapolis, 1959), pp.17–18.
12. W.W. Culver and C.J. Reinhart, 'The Decline of a Mining Region and Mining Policy: Chilean Copper in the Nineteenth Century', in W.W. Culver and T. Greaves (eds.), *Miners and Mining in the Americas* (Manchester, 1985), p.70.
13. As is clear from promotional literature such as *Lawyers and Legislators, or Notes on the American Mining Companies* (1825) and *An Inquiry into the Plans, Progress and Policy of the American Mining Companies* (1825), both written anonymously for a company promoter by a young Benjamin Disraeli.
14. G. Burke, 'The Light Infantry of Capital: The Cornish Miners in the Latin Americas', 9th International Congress of the Latin American Studies Association (Mexico City, 1983).
15. T.C. Baker and J.R. Harris, *A Merseyside Town in the Industrial Revolution: St. Helen's, 1750–1914* (Liverpool, 1954), p.240.
16. Details of the legislation are given in D. Steel, *The Ship-Master's Assistant, and Owner's Manual* (19th ed., 1831) pp.1163–64.
17. *Select Committee on Navigation Laws* (P.P. 1847, X), p.251.
18. As indicated by correspondence of the smelters Vivian & Sons. NLW, Vivian Papers, A892, A1018.
19. For instance, C. Veliz, 'Egaña, Lambert, and the Chilean Mining Associations of 1825', *Hispanic American Historical Review*, Vol. 55 (1975).
20. C. Darwin, *The Voyage of a Naturalist Round the World in H.M.S. 'Beagle'* (1906 edition), pp.266–7.
21. The complexity of the Welsh process may be compared with the simplicity of Chilean technology described by B. Hall, *Extracts from a Journal written on the Coasts of Chili, Peru, and Mexico in the Years 1820, 1821 and 1822* (Edinburgh, 1824), Vol. 2, pp.14–15.
22. An interesting example of the practical difficulties experienced by London-based managers in exporting capital goods to South American mines is given in J.C.

Jeaffreson, *Life of Robert Stephenson* (1864), Vol. 1, pp.78–84.

23. For this reason continental and Scandinavian smelters were unable to compete with British smelters for ore supplies at this time since their works were located inland near mines where timber was available as fuel.
24. Details of the system are described in E. Newell, 'Interpreting the Cornish Copper Standard', *Journal of the Trevithick Society*, Vol. 13 (1986), pp.38–9.
25. R. Chadwick, 'Trading in Ores', *Tamar Journal*, Vol. 5 (1983), pp.21–2.
26. Re-imposed on the copper ore trade in 1842.
27. W.H. Jones, *History of the Port of Swansea* (Carmarthen, 1922), pp.54ff; R. Craig, 'The Ports and Shipping, c. 1750–1914', in John and Williams, *Industrial Glamorgan*, pp.468–71.
28. For a typical complaint see, for example, Swansea collector to board letterbooks. PRO, Cust 36, 5 Aug. 1839.
29. *Warehousing Ports*, (P.P. 1828, XIX), pp.583–7.
30. PRO, Cust 35, 25 June 1834; Cust 36, 19 March 1839.
31. Craig, 'Ports and Shipping', p.468.
32. E. Newell, 'The British Copper Ore Market in the Nineteenth Century, with particular reference to Cornwall and Swansea', (Unpublished D. Phil. thesis, University of Oxford, 1988), pp.159–60.
33. Ibid., pp.169–70.
34. R. Craig, 'The Copper Ore Trade', in D. Alexander and R. Ommer (eds.), *Volumes Not Values* (St. John's, Newfoundland, 1974), p.282.
35. Roberts, 'Smelting of Non-Ferrous Metals', pp.82–3.
36. Newell, thesis, pp.193–8.
37. Ibid., pp.201–9.
38. Toomey, *Vivian & Sons*, p.347.
39. Newell, thesis, pp.209–12.
40. Ibid.
41. Quoted in E.M. Yelland (ed.), *Colonists, Copper and Corn in the Colony of South Australia, 1850–51* (Melbourne, 1970), p.147.
42. Quoted in A.G. Frank, *Capitalism and Underdevelopment in Latin America: Historical Studies of Chile and Brazil* (New York, 1967), p.70.
43. L. Ortega, 'The First Four Decades of the Chilean Mining Industry', *Journal of Latin American Studies*, Vol. 14 (1982), pp.10–13.
44. Newell, thesis, Ch. 3, *passim*.
45. Calculated from Vivian papers, E18, p.173ff.
46. *McCulloch's Commercial Dictionary* (1869 edition), p.1349.
47. *Cambrian*, 3 Oct. 1840; Barker and Harris, *St. Helen's*, p.243.
48. University College of North Wales, Bangor (UCNW), Mona Mine MSS. 2100.
49. UCNW, Mona Mine 2096.
50. Barker and Harris, *St. Helen's*, p.346.
51. C.T. Kingzett, *The History, Products, and Processes of the Alkali Trade* (1877), p.54. At least 46 joint producers of sulphuric acid and copper who used this process between 1867 and 1914 have been identified. J.B. McIntyre, 'The Role of the Wet Process in the Growth of the Pyrite Industry', (Unpublished Ph.D. thesis, University of Nottingham, 1975), p.146.
52. D. Avery, *Not on Queen Victoria's Birthday: The Story of the Rio Tinto Mines* (1974), Chs. 9 and 10; S. Checkland, *The Mines of Tharsis* (1967); Harvey, *Rio Tinto*.
53. Kingzett, *Alkali Trade*, p.59.
54. *Accounts and Papers*, (P.P. 1857–58, LIII), p.441ff; (P.P. 1867–68, LXIV), p.141ff.
55. Toomey, *Vivian & Sons*, p.337.
56. See, for instance, D.B. Barton, *A History of Copper Mining in Cornwall and Devon* (Truro, 1961), pp.79–86; J. Rowe, *Cornwall in the Age of the Industrial Revolution* (Liverpool, 1953), pp.305–26.
57. T.A. Rickard, *A History of American Mining* (New York, 1932), pp.237, 350–3.

58. Ibid., pp.352–4.
59. Unlike American mines, Rio Tinto ores had high rates of oxidisation and were therefore suited to extraction by wet processes. H.C.H. Carpenter, 'Progress in the Metallurgy of Copper', *Journal of the Royal Society of Arts*, Vol. LXVI (1918), p.130; E.D. Peters, *The Principles of Copper Smelting* (New York, 1907), p.2.
60. Particularly the Wilfrey concentrating table. W.Y. Elliott *et al*, *International Control in the Non-Ferrous Metals* (New York, 1937), p.374.
61. Carpenter, 'Metallurgy of Copper', p.134.
62. F.W. Taussig, *Tariff History of the United States* (8th ed., New York, 1931), pp.219–21.
63. For example, Harvey reproduces a cost-benefit analysis undertaken by the Rio Tinto Co. c.1900 to demonstrate how savings could be made by ceasing to export regulus to its Cwm Avon works in south Wales for smelting and refining, and instead smelt pyrites in Spain using the Bessemer process and export blister copper to south Wales for refining. This scheme was put into operation between 1902 and 1906. Harvey, *Rio Tinto*, pp.156–7.
64. C. Schmitz, 'The Rise of Big Business in the World Copper Industry, 1870–1930', *Economic History Review*, 2nd ser., Vol. XXXIX (1986).
65. O.N. Nove, 'History of Copper Mining in Newfoundland', in G.V. Douglas *et al.*, *Copper Deposits of Newfoundland* (St. John's, Newfoundland, 1940), p.9.
66. R. Chadwick, 'A History Lesson on Nineteenth Century Metallurgy', *Journal of the Birmingham Metallurgical Society*, Vol. 37 (1957), p.583. An account of a leading firm's response to changing market conditions is given in Toomey, *Vivian & Sons*, pp.15–18.
67. Williams, *Economic Development of Swansea*, p.79.
68. R. Chadwick, 'New Extraction Processes for Metals', in C. Singer *et al.*, *A History of Technology*, Vol. 5 (Oxford, 1958), p.78.
69. Carpenter, 'Metallurgy of Copper', p.123.
70. Schmitz, 'Big Business', p.406.
71. D.M. Levy, *Modern Copper Smelting* (1912), p.8.
72. Percy, *Metallurgy*, pp.378–80.
73. For description of this process see Chadwick, 'Extraction Processes', pp.83–6.
74. Carpenter, 'Metallurgy of Copper', p.143.
75. Electrolytic refining ceased in Wales c. 1912. W.H. Dennis, *A Hundred Years of Metallurgy* (1963), p.141.
76. Carpenter, 'Metallurgy of Copper', p.123.
77. Ibid., p.132.
78. Ibid., p.123.
79. Roberts, 'Smelting of Non-Ferrous Metals', p.74.
80. G.W. Roderick, 'South Wales Industrialists and the Theory of Gentrification', *Transactions of the Honourable Society of Cymmrodorion* (1987), pp.78–9.
81. Geological Survey of Canada, *Annual Report*, Vol. 14 (1901), pp.30H–31H; Toomey, *Vivian & Sons*, pp.94–7.

THE CITY AND INTERNATIONAL MINING, 1870–1914

By CHARLES HARVEY and JON PRESS

One of the enduring fascinations of British economic history in the years between 1870 and 1914 is the pre-eminence of London as a centre of international finance. In recent years, several scholars have produced books and articles which point to the complexity and variety of functions undertaken by City enterprises, and the rich diversity of institutional arrangements which existed throughout the Square Mile. Of particular interest is the work of Stanley Chapman and Ranald Michie. Chapman's work on investment groups identifies 29 networks of merchants, financiers and entrepreneurs through which capital was channelled into productive uses overseas. These investment groups were entrepreneurial or family concerns 'whose name and reputation was used to float a variety of subsidiary trading, mining or financial enterprises, invariably overseas and often widely dispersed'. He cites as an example, the Matheson group, which, through Matheson & Co. in London and Jardine-Matheson & Co. in Hong Kong, promoted large scale ventures in mining, financial services, textiles, shipping and railways, as far distant as Spain, China, the United States, South Africa and Russia. Not all of Chapman's investment groups were entirely British, but they 'all had a base (office) in Britain and conducted a large part of their trade or financial operations (or both) through London'. The City, according to Chapman, was not merely a mechanism for the transfer of funds from a multitude of savers to governments and firms at home and abroad; it was also a place where entrepreneurship flourished, and opportunity seeking was the natural concern of merchant banks, company promoters, speculators, exploration companies, investment trusts, merchant houses, and investment groups.[1] To this list might be added the solicitors, accountants, consulting engineers, stock brokers, and commodity brokers who frequently engaged in company promotion. Michie takes up this theme in his work on venture capital and the London Stock Exchange, emphatically rejecting the idea, lately revived by Kennedy, that City conservatism and prejudice lay at the heart of British economic difficulties in the late nineteenth century.[2]

This representation of the City as a large, vital, multi-functional cluster of organisations finds confirmation in the recent work of Mira Wilkins. In two important articles, she draws attention to the many thousands of 'free-standing' firms set up between 1870 and 1914 to manage investments abroad in transport, public utilities, banking, financial services, manufacturing, agriculture and mining. These did not grow out of domestic operations, but were formed to manage a single investment. Promoters were to be found in all parts of Britain, but most were based in the City. International company promotion was a widespread and lucrative activity. The majority of free-standing companies had very sparse management, amounting to little more than a small head office staff and a board of directors. They offered a means of supervising overseas investments, and had the attraction that a ready market existed for their stocks and shares. However, because adequate management was lacking in most cases, all but a tiny minority of free-standing international companies can be seen to have failed. They simply did not have the technological, administrative and marketing know-how needed to survive in competitive markets. The only exceptions were firms which either somehow developed fitting management and organisational structures or had their assets managed for them by experienced intermediaries such as mining consultancies or agency houses.[3]

Wilkins' conclusion that the supply of capital and promotional talent in Britain outran the nation's ability to manage its assets overseas cannot be accepted without reservation. Certainly, many thousands of limited companies were registered to operate overseas, and most of them did sink without trace. Most of the 8,400 companies formed between 1880 and 1913 for mining and mine exploration abroad, for instance, are known to have generated very little serious activity. And, of those that did enter production, only a small proportion became profitable.[4] Yet facts such as these are not sufficient to demonstrate that, on the whole, the capital invested in British free-standing international companies was unremunerative. There have been few attempts to measure the rate of return on investments in overseas mining, and of these only the studies of Frankel and of Harvey and Taylor were conducted in a rigorous fashion. Both studies confirm that most international mining ventures failed financially, but that occasional successes were sufficiently lucrative to raise the industry rate of return on capital employed, as measured by internal rates of return, to positive levels. The main result of Frankel's study of gold mining in South Africa is that 'the average internal rates of return on capital investment in the gold mining industry have tended to equality with those calculated on the same basis in other comparable directions of international investment'. Having measured the average rate of return for all mines between 1887 and 1965 at 5.2 per cent, Frankel firmly rejects the 'widely held belief that, on the whole, the return to capital invested in the industry has been negative'.[5] Likewise, Harvey and Taylor compute a healthy rate of return of more than 10 per cent on British capital invested in Spanish mining between 1851 and 1913.[6]

The findings of Frankel and of Harvey and Taylor, though not sufficient to dispel the notion that free-standing companies were a poor vehicle for international investment, do point to the need for caution when generalising about British direct investment overseas before

1914. Many eminent scholars have been drawn to the problem of measuring international capital movements, but there remain substantial points of disagreement over the scale, timing, nature, direction and profitability of investment flows. The estimates-dispute-revision cycle, associated with the names of Simon, Edelstein and Platt amongst others, is hardly likely to be terminated with the publication of Davis and Huttenback's monumental study of the political economy of British imperialism in the 1860–1912 period, *Mammon and the Pursuit of Empire*. In this work, new estimates of the scale, distribution and profitability of British overseas financial movements are presented. The London capital market is confirmed as the 'conduit for the greatest international movement of capital in the history of the world'. Of the £5 billion which flowed through the Stock Exchange, 30 per cent was retained at home, 45 per cent went to Europe, the United States and other countries over which Britain had no direct political influence, 16 per cent went to Empire countries with a large measure of self-government, and just 9 per cent went to the dependent Empire. This movement of funds represented 'the largest absolute voluntary capital transfer in the history of the world'. The average rate of return on Empire investments was greater than on home investments before about 1880, but thereafter the gap between the two narrowed to the point of insignificance.[7]

Davis and Huttenback go further than earlier writers in disaggregating their results, analysing the distribution of financial flows and rates of return geographically, temporally, and by industrial group. Yet the degree of disaggregation is not sufficient to enable the information presented to serve as a basis for more detailed industrial or national studies. Mining is a case in point. On the basis of the minimum estimates presented in *Mammon*, it appears that 12.5 per cent of the capital directed to private (non-governmental) institutions overseas between 1865 and 1914 went into the natural resource industries. The flow was most substantial in the second half of the 1890s and between 1910 and 1914, when it amounted to 29.5 per cent and 14.1 per cent of total private investment respectively. Natural resource investment was widespread geographically, but as a proportion of private funding it was most concentrated in the Empire; accounting for 18.8 per cent of non-governmental capital movements between 1865 and 1914, with peaks in 1880–84 (23.2 per cent), 1895–99 (33.7 per cent) and 1910–14 (19.4 per cent).[8] These figures, and the patterns of natural resource investment revealed by Davis and Huttenback, are of considerable interest in highlighting the importance of the agricultural and extractive industries to economic development in particular places and at particular times. Unfortunately, the grouping of agricultural and mining activities in a single category means that the authors' data cannot be used as the platform for a detailed investigation of British foreign direct investment in the mineral industries. 'Agriculture and extractive', with activities as diverse as Chilean nitrates, Indian tea, Malaysian rubber and South African gold, is not a very helpful classification for anyone interested in the international expansion of a single industry.

There are problems also with the quantitative work that has been done specifically on the history of British overseas investment in the mineral industries. An early survey was conducted by Edward Ashmead in 1908–9, under the title 'Twenty-Five Years of Mining: A Retrospective Review, 1880–1904, of Mining Companies Registered in Great Britain, with Notes and Comments, and the Names and Capitals of the Principal Registrations'. It appeared in the *Mining Journal* in several instalments and covered each of the main mining regions of the world. Ashmead's figures have since been revised and extended, first by McCarty and more recently by van Helten.[9] The grave weakness of these estimates, however, as van Helten readily acknowledges, is that the original data relate to the nominal capitalisation of newly formed companies, and these bear little resemblance to sums actually sunk in mining ventures. It was common for mining companies to register a very large capital, but more often than not the capital actually issued amounted to no more than a small fraction of that authorised. Van Helten nonetheless holds that the figures do give some idea of the geographic and temporal distribution of British direct investment in the mineral industries.[10] But this seems most unlikely, as there is precious little evidence to suggest that the ratio between capital employed and nominal capital was fixed over time and across mining fields. The nominal capitalisation figures for Western Australia between 1895 and 1900, for instance, are clearly far more inflated than the corresponding figures for South Africa.

A better idea of the scale, timing and direction of British direct investment in overseas mining might be gained from the analysis of the data for individual companies published in *The Stock Exchange Year-Book* (SEYB). These volumes are not comprehensive, excluding many small and private ventures, but they do contain data on most of the firms that made serious investments abroad. Individual company entries contain information on the location and nature of company activities and various financial and management details. An elaborate database might be constructed as a tool for research into such matters as capital flows and free-standing company formation. However, this would be costly and time-consuming, and for present purposes a much simpler and more limited exercise was decided upon. This involved creating data files for the years 1875, 1894 and 1913 in which each record corresponds to an entry in the SEYB. A record was created for each non-ferrous metal mining company registered in Britain or the British Empire. Each record contains fields for company name, location of mine, principal metal(s), and long-term capital employed (issued share capital plus debentures).

The main purpose of the exercise was to provide a reasonably accurate description of the scale and direction of overseas activity, at three significant points, as a starting point for an examination of the processes and mechanisms of foreign direct investment in the mineral industries. The year 1875 was selected because it saw the end of the overseas mining boom of the early 1870s. Companies had been formed to work properties abroad well before this time, but it was during the early 1870s that London emerged as the recognised centre for international mining finance. The year 1913 was chosen simply because it lay at the end of a period of vigorous expansion. The year 1894 stands midway between 1875 and 1913, and has the advantage of coming after the development of new mining fields in South Africa and elsewhere in the 1880s, but before the dramatic South African and Australian gold mining booms of the 1895–99 period. Thus the figures for 1875 capture the results of a first wave of expansion associated largely with the early 1870s boom; the 1894 figures capture the results of a second wave of developments in the 1880s; the 1913 figures describe the industry at its prewar peak.

TABLE 1

BRITISH FOREIGN DIRECT INVESTMENT IN NON-FERROUS METAL MINING (1875, 1894, 1913)

Year	No. of Companies	Total Invested * £	Mean Capital Employed * £
1875	39	11,391,271	292,084
1894	415	85,076,351	205,033
1913	957	240,018,465	250,803

Notes: *Investment and capital employed are defined as the sum of paid up share capital, outstanding debentures and mortgage bonds.

Source: Stock Exchange Year-Book.

The summary statistics presented in Table 1 confirm the rapid growth of British investment in international mining ventures in the 1870–1914 period. Long-term capital employed grew at an average annual rate of more than 8 per cent, and the number of mining companies listed climbed from 39 in 1875 to 957 in 1913. The general impression is one of a vigorous response on the part of British capitalists to investment opportunities around the world. The favoured vehicle for the management of these investments, as Mira Wilkins suggests, was the free-standing international company employing a relatively modest capital.

The creation of an international metal mining industry centred on the City of London was inspired by two powerful economic forces. The first of these was the rising demand for base metals such as copper, tin and lead in consequence of the rising tempo of industrialisation in Europe, North America and Japan. Traditional users of non-ferrous metals, like shipbuilders, were experiencing buoyant growth at a time when the newer industries of the so-called 'second industrial revolution' were beginning to make their mark. The demand for tin, for example, was given a tremendous boost by the success of the food canning industry, which required large quantities of tinplate, and the motor vehicle industry, which needed tin for solder and for the alloys used in bearings. Copper, aluminium and zinc production, likewise, were each encouraged by the rise of the electricity and chemical industries. World mine production of copper and tin increased by factors of nine and four respectively between 1870–74 and 1910–14.[11] Britain, meanwhile, as a leading industrial power, faced an ever-increasing dependence upon imported ores and metals. Until about 1870 the country was virtually self-sufficient in copper, lead and tin. The domestic copper industry, however, had already begun to fade, and, although production of the other ores held up rather better, here too consumers were fated to import dependence. The expansion of British mining interests overseas before 1914 was stimulated to some degree by shortages of ores mined at home and their relatively high costs of extraction.

A second factor stimulating British mining entrepreneurs to look abroad was the international acceptance of gold as a medium of exchange. The widespread adoption of the gold standard among the major economic powers created a demand for gold which before the second half of the 1880s proved difficult to satisfy.[12] Rising levels of economic activity and international trade induced a search for gold across the globe, and between the 1880s and 1914 new sources of supply were brought into production in many countries. Of particular importance were developments in South Africa which, following the discovery of the Rand outcrops in 1886, forged ahead to become the world's largest producer of gold by the early twentieth century. Impressive increases in production were also recorded in the United States and Australia. In the former, the rush was to the frozen wastes of Alaska; in the latter, the discoveries at Kalgoorlie in Western Australia in 1893 were rich enough to sustain a doubling of national production in the second half of the 1890s. Elsewhere in the world new mines were entering production on a substantial scale. Siberia, Canada, India, Mexico, New Zealand and the Gold Coast all made significant contributions to the expansion of world production which is recorded in Table 2.

British companies were to be found wherever and whenever there was an intensification of mining activities. No part of the world was considered out of bounds, though some were viewed with more interest

TABLE 2

WORLD MINE PRODUCTION OF GOLD, 1870–1914

Period	World Production (Tonnes)	Index of World Production (1870–74=100)	Percentage Shares of World Production				
			USA	Australia	Russia	S. Africa	Others
1870–74	752	100.0	39.8	34.3	23.8	0.0	2.1
1875–79	827	110.0	38.2	24.5	23.2	0.0	14.1
1880–84	749	99.6	32.9	24.1	24.2	0.0	18.8
1885–89	812	107.9	30.7	21.9	20.4	1.7	25.3
1890–94	1,082	143.8	24.2	20.4	17.4	16.2	21.8
1895–99	1,859	247.1	23.7	20.3	10.5	24.0	21.5
1900–04	2,234	297.0	26.4	24.4	8.1	12.5	28.6
1905–09	3,142	417.7	22.2	16.2	6.4	31.2	24.0
1910–14	3,434	456.5	20.3	10.7	6.3	38.1	24.6

Source: C.J. Schmitz, *World Non-ferrous Metal Production and Prices, 1700–1976* (1979), pp.80–5.

than others. It was the United States and Spanish mining booms of the early 1870s which really established London at the hub of the world industry. Between 1870 and 1873, at least 65 companies were registered in Britain to carry on mining and milling operations in Colorado, Nevada and Utah.[13] In the same period 13 companies were formed to exploit Spanish concessions, and the successful launch in 1873 of the Rio Tinto Co., with an issued share capital of £2 million, signalled that very large sums could be raised for overseas ventures if they were skilfully promoted.[14] Copper, sulphur, lead and iron ore were the main attractions of Spain. In the United States, silver and gold mines were the main interest of British investors. Of the £11.3 million invested in overseas mining shares and debentures in 1875, a third was invested in Europe (mainly in Spain) and a third in the North America (mainly in the United States). Copper accounted for nearly two-fifths of the total and silver one-fifth.

The pattern of investment changed quite dramatically after 1875, as can be seen from Table 3. Particularly evident is the very substantial relative decline of European copper mining as a target for investment. In the 1870s and 1880s, exports from the British-owned Rio Tinto and Tharsis mines raised Spain to a leading position in the world copper market, almost on a par with Chile and the United States. Thereafter, however, as United States copper output continued to double every 10 years, leadership of the industry passed into American hands. Substantial new investments were made by British companies in copper mining in Australia and South Africa, but by the later 1880s gold had become the main preoccupation of British mining entrepreneurs and investors.

The discovery in 1886 of the Witwatersrand gold fields in the South African Republic stands as one of the most important landmarks in the history of international mining. In its wake came the formation of numerous gold mining companies and a rush of capital from Britain sufficient to establish southern Africa at the forefront of the world industry. The early outcrop mines were very easy to work and the ores simple to treat, and problems only began to occur following the discovery that the gold-bearing reef plunged steeply downward and that the ores became pyritic at depth. Deep level mines began to displace the earlier outcrop mines during the 1890s, encouraged by the commercial development of the cyanide process for the treatment of the complex pyritic ores. A second investment boom, beginning in 1895, greatly increased the capacity of the Rand mines, and, despite the setbacks of the Boer War, by 1913 South Africa was supplying two-fifths of the world market. In that year, 221 British gold mining companies were active in southern Africa employing a capital of £94.5 million. Most held concessions on the Rand, but a minority had mines in Southern Rhodesia where the industry grew quite rapidly between 1899 and 1913.[15]

Southern Africa accounted for about half the long-term capital employed by British overseas mining companies in 1913. The second most favoured region for investment was Australia, with 16 per cent of the total. Gold mining in Australia began in 1851 and was largely concentrated in Victoria. When output in that state began to fall in the early 1880s, it was at first counteracted by increases in Queensland and later, after 1895, by the rapid development of the riches of Western Australia. Besides the extension of gold mining, the mineral industries were boosted after the mid-1880s by the exploitation of the rich deposits of silver-lead-zinc ores at Broken Hill.[16] In addition, there was a marked acceleration in the production of coal and copper. As a result, minerals and metals actually displaced wool as the leading Australian export for a few years at the opening of the twentieth century. Before the 1880s, most of the capital required to exploit the mineral riches of Australia came from local sources, and it was only in the 1890s, when the Western Australian gold fields were opened up, that a large part of the necessary resources came from Britain. The West Australian boom coincided with the second wave of investment to southern Africa, and contributed to the spectacular rise in the volume of British capital directed into mining operations in the 1895–99 period.[17]

It was not only in southern Africa and Australia that gold proved a

TABLE 3 (cont.)

Field	Year	Rank	Number of Companies	Investment (£000)	Investment as a % of Total **
Far Eastern	1875	-	-	-	-
Tin	1894	18	4	770	0.9
	1913	14	26	3,096	1.3
South	1875	9	1	200	1.8
American	1894	28	2	250	0.3
Copper	1913	15	11	2,987	1.2
South	1875	4	3	425	3.7
American	1894	8	20	2,696	3.2
Gold	1913	16	22	2,966	1.2
North	1875	15	1	105	0.9
American	1894	14	3	1,528	1.8
Copper	1913	17	7	2,949	1.2
European	1875	-	-	-	-
Gold	1894	24	3	403	0.5
	1913	18	7	2,756	1.2
Australasian	1875	-	-	-	-
Lead	1894	6	4	2,299	2.7
	1913	19	10	2,503	1.0
Central	1875	-	-	-	-
American	1894	22	6	549	0.7
Gold	1913	20	11	2,170	0.9

Notes: *The fields are ranked from 1 to 20 in accordance with capital employed in 1913. As a result, coverage for earlier years is less complete than for 1913. In fact, just 53 per cent of all capital was employed in these fields in 1875, compared with 75 per cent in 1894 and 84 per cent in 1913. The major omission in 1875 is North American silver, which accounted for 17.7 per cent of total capital employed in that year, but only 2.6 per cent in 1894 and 0.1 per cent in 1913.

**The relevant figures for total investment are £11,391,271 for 1875; £85,076,351 for 1894; £240,018,465 for 1913.

Source: Stock Exchange Year-Book.

powerful lure for British mining entrepreneurs and investors. Of the long-term capital employed by active British overseas metal mining companies in 1913, fully 60 per cent was tied up in gold mining ventures. The gold fields of North America, Central America, India, South America and Europe, and the silver-gold fields of Central America, all feature in the list of important targets for British metal mining investment presented in Table 3. As many as 477 gold and 20 silver-gold companies were active in 1913, and in certain locations, as in the Mysore district in India, British companies controlled virtually the entire industry. Furthermore, many of the firms classified in the exploration and other categories had some connection with gold mining. Exploration companies were very active in winning concessions over mineral-bearing land, and in the promotion of operating companies to exploit concessions. They were particularly conspicuous in the 1890s, when a large proportion (40 per cent in 1895) of all new international mining companies were created for purposes of exploration and company promotion. A large number of other companies, though involved in actual mining operations, had interests in more than one metal. This might arise because they were exploiting complex deposits which yielded several metals or because they owned and operated several concessions. Gold production was frequently one of the activities of these firms, and this largely accounts for their prevalence by 1913 in southern Africa and Australia.

The intensity of British interest in gold mining between 1880 and 1914 should not be allowed to obscure the fact that sizeable investments continued to be made in base metal mining. British firms operating in southern Spain, for example, progressively expanded their mining operations and integrated forwards into copper and lead smelting. The copper companies alone employed more than 25,000 men on the eve of the First World War.[18] Other copper companies – in Australia, South Africa and Russia – built large mining and smelting complexes and employed capitals in excess of £1 million. Impressive achievements were also recorded in tin mining. Before the turn of the century, British firms found it hard to compete in Malaya with Chinese entrepreneurs who controlled the supply of labour and who owned the best mineral bearing alluvial deposits. The adoption of more capital intensive recovery techniques, originally used to work alluvial gold, altered the competitive balance. Armed with the new technologies of gravel pumping and dredging, British companies were able dramatically to reduce their labour requirements and treat lower grade deposits. In 1900, European firms accounted for just 10 per cent of Malayan tin production; the corresponding figure for 1915 was 28 per cent. After 1920, British firms pressed home their advantage to gain effective control of the industry.[19] Experience gained in Malaya was readily transported elsewhere. High tin prices and improved communications promoted a boom in Nigerian tin mining after 1911, and by 1913 as many as 53 companies were active with a combined long-term capital of £3.9 million.

The surge in British direct investment in metal mining overseas after 1870 was not without foundation. Britain had led the world in the production of copper, tin and lead for much of the eighteenth and nineteenth centuries, and over this long period a large pool of expertise had been accumulated – technological, managerial and financial. This expertise resided partly in the regions, in the mining districts of Cornwall, Devon and Derbyshire and elsewhere, but it resided equally in London. From the 1820s onwards, ties were created between London and the provinces, as mine promoters looked increasingly to the metropolis for the funds needed to work mines at ever greater depths. A market for provincial mining stocks gradually developed in the City; the number of mining ventures quoted in the share lists of the *Mining Journal* rising from 30 in the mid-1830s to about 500 in the 1850s. The volume of mining share transactions was sufficient to encourage various attempts to set up a specialist mining stock exchange, although eventually the London Stock Exchange itself provided a satisfactory market for the higher class of mining stocks and shares.[20] London was emerging by the 1850s as the centre of the national mining industry. Leading mining engineers and promoters, like John Taylor & Sons, naturally gravitated towards the City and made it their base. Mining overseas was for them but a further extension of their field of vision. In the 1850s, Taylor did not hesitate to take on the promotion and management of a group of lead mines in southern Spain. This step marked the beginning of his firm's long and distinguished career as one of London's most important international mining houses.[21]

After 1870, British mining entrepreneurs, already accustomed to promoting and managing companies in many different fields, had every incentive to seek and respond to investment opportunities abroad. It was apparent by the beginning of the period that domestic production of copper, tin and lead would increasingly fall short of domestic consumption, and that Britain could never become a major supplier of precious metals. The continued prosperity of many consulting engineers, equipment suppliers, promoters, brokers, commodity dealers and financiers depended on keeping up the supply of metals and metal mining companies, and the development of prospects overseas must have appealed to each of them as the obvious way of protecting and extending their interests. Whenever circumstances were propitious, as when the price of a particular metal shot up in consequence of temporary shortages, a fresh crop of mining ventures would be launched and placed before the public. What is stunning to the casual observer is the immediacy of the City's response to opportunity and the sheer number and variety of mining prospects available to company promoters.

The fact that a large number of mining concessions were always available to London-based company promoters reflects the special position of the City at the centre of a global information network. British merchants were present in all parts of the world; they had ready access to local information; and they corresponded on a regular basis with traders and financiers in the City of London. Most correspondence dealt with detailed matters relating to commodity prices, credit and orders, but when promising investment opportunities arose, these would be related back home as a matter of course. The situation in mining was little different to that in shipping, railways, tramways, water, manufacturing and financial services. A merchant house with British connections would become aware of a potentially lucrative investment, often through influential local contacts; details would be sent back to London and a syndicate formed; a concession would be secured by the syndicate in the host country; a company would be floated in London to exploit the syndicate. The main promotional gains accrued at the point of transfer of a concession from a syndicate to a newly-formed operating company. Usually a substantial price was paid for the concession in cash, debentures or shares, and besides this contracts for construction, management services and supplies might well be granted to syndicate members.

There were, of course, many variations on the basic pattern. The Rio Tinto Co. flotation of 1873 was exceptional because of the large size of the capital needed to purchase the mines, but the way the company was brought into being was typical of the period. The availability of the mines was brought to the attention of Matheson & Co. in London through Heinrich Doetsch of Sundheim & Doetsch, general merchants based in Huelva in southern Spain. Doetsch had the foresight to see that, if the Rio Tinto mines were developed to their full potential, then his business eventually stood to gain from a large increase in trade. A syndicate to purchase the Rio Tinto concession was organised by Hugh Matheson in London. The mines were purchased by the syndicate and immediately sold to the Rio Tinto Co. The new company was floated on the London Stock Exchange. The syndicate divided up £600,000 in eight per cent debentures and £150,000 in cash. Matheson & Co. was appointed as commercial agent for the new company, and the civil engineers Clark, Punchard & Co. won the contract to build the Rio Tinto railway and shipping pier. Hugh Matheson was appointed as first chairman of the Rio Tinto Co. with Heinrich Doetsch as his deputy.[22]

Merchant interests were no less important in the development of mining in southern Africa. It was the discovery of diamonds in the early 1870s in the region known as Griqualand West that first attracted the attention of London capitalists. The diamond-bearing deposits found on the Dutoitspan and Bultfontein farms were at first worked by large numbers of individual diggers working a myriad of claims. The system was supported by Governor Southey, who, fearing the consequences of large-scale company exploitation, resisted all attempts to consolidate claims. Following his removal in 1875, official policy was reversed and a process of consolidation ensued. Southey had been supported by the Kimberley merchants who, backed by the coastal merchants of Port Elizabeth, had prospered as suppliers of goods and credit to the diggers. Once he had gone, however, the more progressive merchants led the way in buying up claims and promoting companies. Some of these were general merchants like James Ferguson, and E.W. Tarry & Co., the largest importers of machinery on the field. Many more were diamond merchants with partners or correspondents in London or Paris. Some of the most successful of these were Jules Porges & Co., A. Mosenthal & Sons, the Barnato Brothers, Alfred Beit, and Martin Lilienfeld & Co. British and continental capital flowed in after July 1876, and by the beginning of 1880 the majority of claims were in the hands of just 12 operating companies with an aggregate capital of

£2.5 million. Companies like the Cape Diamond Co., the Kimberley Mining Co. and the Griqualand Diamond Mining Co. were directly controlled by London diamond merchant élite and their financial allies.[23]

In large measure, it was the diamond magnates of Kimberley who took the lead in the development of the Witwatersrand gold mining industry following the first surge in the registration of claims in 1886. Hundreds of mining companies were formed between 1886 and 1889 as the scramble to secure title to gold-bearing sections of land continued, but the first flush of enthusiasm was abruptly curtailed once the discovery was made that mining and recovery costs were set to rise sharply as deep mining and capital-intensive recovery techniques became the norm. At this stage, the more powerful and well connected mining capitalists were able to step in and secure large numbers of concessions across the whole length of the Rand. The most powerful group to emerge was that organised by the diamond merchants Julius Wernher and Alfred Beit, who had made their fortunes with Jules Porges & Co. The firm was reorganised in 1890 following the retirement of Jules Porges to Paris, and renamed Wernher, Beit & Co. Its operations on the Rand were conducted through Eckstein & Co. which had the services of Hermann Eckstein, a shrewd negotiator and strategic thinker, and James Taylor, one of the few men capable of assessing the true worth of a prospective mine. Eckstein and Taylor acquired and developed some of the best properties on the central Rand. Wernher, Beit & Co. took a keen interest in mining finance, technology and economics. Strong links were formed between mining capitalists in London, Paris and South Africa. When Rand Mines Ltd., a powerful holding company with a controlling interest in a clutch of deep level ventures, was founded in 1893, its initial funding came from a range of prestigious sources, including the London-based merchant banker, Ernest Cassel, various members of the Diamond Syndicate, a group of leading consulting mining engineers, and the Rothschilds.[24]

Each of the 15 or so mining groups which rose to prominence on the Rand after 1889 owed its position to some degree to the ready availability of European capital and expertise. Cecil Rhodes may have enjoyed disparaging the efforts of London bankers, but without them Consolidated Gold Fields of South Africa, which he founded with Charles Rudd in 1887, would never have got off the ground.[25] The relationships formed between enterprising men in the field, like Rhodes and Rudd, and their metropolitan backers, were evidently mutually rewarding and borne of necessity. Fortune seekers like Wernher, Beit, Rhodes, Barney Barnato, Joseph Robinson and George Farrar had the wit, foresight and energy needed to gain control of tracts of gold-bearing land and to create organisations that might retain control of any operating companies formed to exploit them. Their associates in Europe were skilled in company promotion, and could offer, directly or indirectly, a range of services of vital importance to fledgling mining enterprises. Both parties stood to gain large fortunes through their involvement in mining company promotion and management. Large amounts of money were made through the issue of vendors' shares to concession owners. The buying and selling of shares in volatile markets and with insider information was another rich source of profit. Management fees and fees for financial and technical services were a more regular source of income. Equipment, shipping and other contracts were a further much cherished source of gain.

The same pattern can be observed in tin mining in Malaya and Nigeria. In both cases, the extension and formalisation of British territorial control was followed by attempts by European merchants to secure title to mineral bearing lands. In the Selangor and Perak provinces of Malaya in the early 1880s, for instance, the lead was taken by agency houses whose partners were closely associated with the British administration. At least three of the concessionaires were members or ex-members of the Straits Legislative Council, and four out of six concessions came under the control of two Singapore managing houses, Paterson, Simons & Co. and Syme & Co. Meanwhile, in 1883, Jardine, Matheson & Co. formed the Rawang Tin Mining Co. whose management was handed over to Scott & Co. of Singapore. Most of these early efforts to exploit the mineral riches of Selangor and Perak failed, but the colonial capitalist élite persisted and eventually succeeded in attracting British capital and expertise to Malaya on a large scale.[26] In Nigeria, the lead was taken by the Niger Co., which in 1899 handed over to the British government its territorial administrative responsibilities and privileges in exchange for cash and a share in the royalties resulting from subsequent mineral exploitation. Over the next few years, the Niger Co. succeeded in monopolising mineral rights in the most promising regions of the interior. The intention was not that the company should abandon its traditional role as a trading enterprise in favour of tin mining, but that it should be in a position to profit from any escalation of mining activity. Between 1910 and 1914, prospecting licenses were granted to large numbers of firms, and two promotional booms ensued, punctuated by a crash in 1912. The Niger Co. sought profit in the short term through the licensing system and company promotion, and in the longer term through its control of transport in the mining regions, trading activities and royalty payments.[27]

The activities of entrepreneurs based overseas but with connections in the City of London were clearly very important in stimulating British capitalists to invest in international mining ventures. Metropolitan businessmen were ever responsive to investment opportunities brought to their attention, and with time many of them became opportunity seekers. The relative advance of companies in the 'exploration' and 'other' categories recorded in Table 3 reflects in part an increasing need for London-based company promoters to keep up the supply of new mining prospects, and systematise the development process. They were, as van Helten and others have noted, troubled by the number of barren prospects brought to the market in the 1880s and 1890s, and they had a vested interest in improving procedures for finding and evaluating prospective mines.[28] Yet, even so, as the situation in Nigeria demonstrates, the model which best characterises the 1870–1914 period as whole, is one of peripheral initiation and metropolitan response. And the pull from the periphery was at its strongest in territories of increasing British influence, with an entrepreneurially-minded merchant community, and countries lacking in capital and mining know-how. British involvement in mining in southern Africa, India, Malaya and Nigeria stemmed ultimately from colonial political and economic developments, whereas the British presence in metal mining in Spain and Russia was purely a consequence of the technological and financial impoverishment of those countries. British mining capitalists did not enjoy the same degree of success in countries with ample local supplies of capital and know-how or in countries that naturally looked elsewhere to remedy local deficiencies. British involvement in mining in the United States diminished as that country grew richer, and in Australia, although the British presence was substantial, a large part of the mining effort was sustained by domestic resources – human and financial. In Mexico, a resource-deficient nation which looked to the United States not Britain for support, the pre-1914 boom in precious metal mining was sponsored mainly by American companies, which invested 5.7 times more than their British counterparts.[29] A similar situation existed in other countries in Central and South America.

Neither the sharp advance of American interests in international mining after 1900, nor the eventual displacement of London by New York at the centre of the world industry, should be allowed to detract from the achievements of British mining capitalists before 1914. As domestic investment opportunities dwindled, full advantage was taken of promising developments abroad. The City of London offered a number of services which proved very attractive to mining concession holders, brokers and developers in the colonies and elsewhere. The first of these services involved the formation and promotion of companies, and the raising of funds for mine development through the issue of shares and debentures. Hall and others have described the promotional techniques used to launch new mining companies, and the profits that flowed to vendors and promoters.[30] The emphasis in the literature has been on corruption and attempts to stamp out fraud. One unfortunate consequence of this bias is that the essential efficiency of the London market has been neglected. The costs of raising capital, including those resulting from fraud, have not been estimated with any degree of precision; just as systematic studies of mining profitability remain a rarity. The openness of the London market, and the large amount of freely available information in publications like the *Mining Journal*, suggest that the extent of financial corruption may well have been exaggerated, and that part of the appeal of London lay in the possibility of raising cash for inherently speculative ventures on terms that gave a prospective mine at least a fighting chance of success.

A second attraction of London was that the metropolitan business community could offer clients a bundle of competitively priced services. Merchant bankers like the Rothschilds did a large amount of business with all the mining companies in which they took a major interest. For the gold mining companies of the South African Rand, the Rothschilds could act as gold refiners, metal brokers, insurance agents, shipping brokers, financial advisers and bankers. Short term credit was readily available to customers against the security of sales on the London bullion and base metal markets. These forms of support, and the position of London at the heart of the international trade and payments systems, made London the natural home for large numbers of international mining companies.[31] Many of these, though precisely how many it is impossible to say, were actually owned and operated by foreigners. The attractions of London for these firms lay mainly in the range of financial services on offer. The London share market was very open and it was possible to generate trade in a company's shares and fixed interest securities more easily than elsewhere. Market specialists, like 'kaffir' jobbers, or brokers who dealt exclusively in Australian gold shares, could be employed to good effect at times of crisis. The position in London contrasted sharply with that in Germany and Paris where a much more cautious approach was taken towards dealings in international mining securities.[32]

In addition to financial and marketing services, City firms had the skills needed to develop and manage mining properties. Mining and civil engineers, together with the merchants, bankers and stock brokers, were numbered among the more active promoters of international mining companies. A prospectus for a new company or a reconstruction of an old company would almost invariably contain a report from a mining expert, and newly-formed companies would generally employ a consulting engineer.[33] This practice had developed in Devon and Cornwall and was straightway adopted by international companies. By the end of the 1870s, most of the top British mining engineers were based in London. The practices of many remained small, employing a few apprentices and one or two senior engineers; others grew to quite a size. The largest of them took on mine management in addition to surveying, estimating and planning. John Taylor & Sons controlled a clutch of lead mines in southern Spain and reigned supreme in the goldfields of India. Equally, Bewick, Moreing & Co., which employed engineers of the calibre of Herbert Hoover, was responsible for the management of many of the gold mines of Western Australia and elsewhere. The London-based mining engineers who worked for these and other consulting firms saw themselves as internationally mobile professionals with valuable technological and managerial skills. They took the lead in forming their own professional association in 1892 – the Institution of Mining and Metallurgy – which by 1914 had 2,310 members employed in all parts of the world.[34]

Any explanation of the pattern and intensity of British involvement in international mining before 1914 must take account of both the economic and political realities in investment receiving countries and the capacity of the City of London to respond flexibly to a wide range of opportunities and problems. Businessmen operating abroad regularly approached City promoters with new mining propositions; the geographic distribution of which depended ultimately on the strength of political and commercial ties between London and the host country, and levels of demand in the latter for foreign capital and expertise. The propositions brought forward were evaluated from various angles by a metal mining community which included financiers, stock brokers, merchants, metal dealers, equipment suppliers, contractors and consultant mining engineers. Members of the community as a matter of course involved others in any proposition in which they took an interest. They did so because they often required complementary forms of expertise, and as a means of spreading risks. The inherently uncertain nature of overseas mining recommended joint ventures over concentrated ownership. It was also wise for promoters to take a long-term view of mining propositions, as a successful venture might boost incomes in many ways over a long period. For mining companies to be successful, they needed the services of well trained and financially astute mining engineers.

This view of the City and international mining between 1870 and 1914 differs from that of earlier accounts in highlighting the importance of information flows and business networks rather than speculation and share manias. Of the many thousands of companies registered for the purpose of taking up mining concessions, a large majority never entered production. The City had a propensity to create companies. It was an easy matter, and a useful way of investigating a prospect without risking too much capital. Companies were formed and liquidated by collaborating groups of firms and individuals in the normal course of business. It was understood by all concerned that only a minority of mines would ever be worth developing. Through involvement in numerous exploratory projects, promoters might expect to gain participation in at least some successful ventures. Shares in unlikely properties could be unloaded whenever the market boomed. The aim of the most ambitious mining entrepreneurs was to acquire a controlling interest in a number of first-class companies; and, indeed, large numbers of nominally free-standing companies were under the dominion of powerful capitalists, acting individually or in concert. Nowhere was this more true than in the goldfields of South Africa. By 1913, for instance, following a series of amalgamations in 1908–9, the Corner House group led by Wernher, Beit & Co. controlled 15 Rand mines with an issued share capital of more than £14 million.[35] The free-standing company may have been an important vehicle for British foreign direct investment, as Mira Wilkins asserts, but sight should not be lost of the fact that many legally separate enterprises were controlled and operated by more powerful groups which themselves represented a complex of interests.

The British were by no means exceptional in this. Several German firms, most notably Metallgesellschaft, Aron Hirsch and Beer Sondheimer, controlled international networks of mining and metal-trading businesses before 1914. The most vigorous of these, Metallgesellschaft, worked through powerful subsidiaries like the American Metal Co. and the Australian Metal Co. which had interests in a long succession of new ventures.[36] And when operating away from home, American groups operated in a manner very similar to that of their British and continental European counterparts. The Guggenheims operated in Mexico as an investment group looking for multiple sources of profit, not as a classic United States multinational. They were politically well connected, and dominated the Mexican mining industry through an elaborate web of companies. Not all Guggenheim properties were controlled through their main vehicle, the American Smelting and Refining Co. (ASARCO). Active subsidiaries like the Mexican Ore Co., the Aguascalientes Metal Co., the American Smelters' Securities Co. and the Guggenheim Exploration Co. were involved in making deals and floating companies in all parts of Mexico. The Guggenheims were not alone. Mexico was a land of opportunity for American mining companies, and New York was to that country as London was to southern Africa. Large numbers of concessions were bought up and mining companies launched. Most of them failed, but a mighty industry was built by powerful groups consisting of financiers, stock and metal brokers, equipment suppliers and mining engineers.[37]

It is not fully evident, in the light of what we know of international mining between 1870 and 1914, that the British were unique in the way they organised and managed their international business activities. Much more comparative research, of the kind undertaken by Michie, will be needed before we can make definitive statements about the nature and organisation of international business enterprise in different countries. Equally, there is a need for further research of the kind undertaken by Chapman on relationships between major centres of international trade and finance and the peripheral economies of the developing world. For the moment, however, it seems reasonable to conclude that, in the case of the British Empire, developments on the periphery must be weighed more heavily in the analytical balance than Cain and Hopkins are inclined to allow for in their challenging thesis on gentlemanly capitalism and the new imperialism of the later nineteenth century.[38]

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NOTES

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SOUTHERN AFRICAN MINING INTERESTS IN AUSTRALIA BEFORE 1939

By SIMON KATZENELLENBOGEN

South Africa's mining industry moved rapidly from being a mere recipient of capital investment to being a channel through which capital found its way elsewhere, then to generating surplus capital for investment in mining activity throughout the world. Early capital flows were regional; by the time Transvaal gold mining was firmly established, for example, Albert Ochs, a relatively little-known Transvaal mining speculator with the dubious distinction of being cordially detested by Cecil Rhodes, had already expanded his interests into Mozambique. On this basis he was able to serve as an intermediary between Robert Williams and King Leopold of the Belgians in the early development of Katanga's copper deposits.[1] Ochs was one of a number of people financially based in South Africa who became heavily involved in Mozambique, while the British South Africa Co., itself supported initially by Rhodes's Kimberley diamond and Transvaal gold interests, was a major investor in Mozambique railway and port development.[2] South African-based businessmen were largely responsible for the early attempts to develop the economy of German Southwest Africa, while even some of the nominally German companies operating there were in fact more South African/British than German.[3]

More recently, scholarly attention has turned towards South Africa's position as a provider of capital not only within southern Africa, but throughout the world. This is by no means a purely contemporary phenomenon. Capital generated in South Africa very quickly became inextricably entwined in international mining finance.[4] Consolidated Gold Fields of South Africa (Consgold) established a subsidiary company in the United States as early as 1909,[5] and led South Africa into becoming an important part of the international mining finance network. In this network individuals directing the activities of these companies were members of a distinct community of investors who interested themselves in mining enterprises wherever they could be found. The country in which potentially profitable opportunities arose, the politics of its government or the nationality of others participating in a scheme were never necessarily considered barriers to investment. The community of mining investors was truly international and, in some respects, apolitical.

The complexity of the network which this community operated makes it difficult to identify the source of any particular investment or to trace investment patterns with any degree of precision. Nevertheless, exploration of the connections that can be traced sheds light on the workings of international financial groups and on the individual decision makers within them. Relationships between individuals and the conflicts between parent companies and subsidiaries over the exercise of real power are important aspects of these links. Interesting examples of them can be seen in facets of the involvement of South African-based companies in Australia in the period from the late nineteenth century to the eve of the Second World War.

These two regions have links going back to the early period of mining development in southern Africa, when connections tended to be rather diffuse and, like non-financial ties, based more on personal than corporate activity. One individual in particular, Edmund (later Sir Edmund) Davis, was financially active in both areas in the late nineteenth and early twentieth centuries, although his interest in Australia appears to have diminished sharply subsequently. During the interwar period, Consgold and the Anglo-American Corporation began to establish a more institutional presence. Consgold first bought shares in Western Australian mines in 1926 – and these acquisitions provided the basis for a much more significant presence in Australia after the Second World War.[6] The Anglo-American Corporation flirted briefly with the Mount Isa Mines in 1926, subsequently moving ahead rather cautiously.[7]

Although these two companies went on to establish themselves very substantially in Australian mining, they did not always have an easy time. Pitfalls abounded, as the Union Minière du Haut-Katanga, another African-based company, found when, in the 1970s, its attempts to join the rush for Australian profits met with a conspicuous lack of success.[8] This paper, though, is concerned with facets of the earlier period, particularly between the wars.

When the possibilities of the profitable exploitation of gold reserves in the Transvaal began to be appreciated in the 1880s, many Australians with mining experience went to the new fields, taking their hopes and expertise with them. Some made more of a mark than others. One Australian geologist, for example, Edward Dunn, was one of the first people to predict that the Rand would in fact prove to be very rich. But in the early 1890s, technical obstacles to the successful separation of minute particles of gold from the surrounding rock raised serious doubts about the long-term viability of the Transvaal mines.[9] As the 1890s gold boom in Western Australia – the 'Westralian gold boom' – built up, many Australians made the return trip.[10]

Whilst Edmund Davis was building up his position in German Southwest Africa, Angola and Rhodesia, he was also financially interested in a large number of companies operating in Western Australia, Queensland and New South Wales. A native of Australia, Davis's early career hardly showed signs of his future importance in worldwide mining finance. After studying art in France, he was sent to live with relations at the Cape, in an attempt to improve his health. He went to Southwest Africa and from very small beginnings began to amass what was to be a very substantial fortune. Becoming a partner in the finance house of Picard & Co., he established very close and influential financial ties with German investors, some of whom were brought into his Australian activities.

In Australia, Davis was a director or financial backer of a large number of companies, most of which were registered in London, where they could draw on the great, though not generally well-informed, public enthusiasm for buying shares in Australian, especially Westralian, gold mining ventures. Among Davis's colleagues in some of these enterprises was the civil engineer Percy Tarbutt, who was also involved in some of his southern African undertakings. In one not very successful New South Wales company, Davis was joined by another Africa colleague, George Cawston, secretary of the British South Africa Co. These two men were, however, more closely associated in several schemes in Southeast Asia and China than they were in Australia.[11]

Many of Davis's companies were short-lived, being absorbed into others or simply being liquidated and disappearing without trace. This was in the nature of mining finance at the time, but there was undoubtedly some benefit to be derived from share speculation as well. Other companies were much more viable propositions. One such was Hannan's Brown Hill, one of the richer companies in the 'Golden Mile' at Kalgoorlie, which by 1896 had become Australia's richest goldfield. Like so many other mines in Kalgoorlie and elsewhere, mines on the Golden Mile could become profitable only if the ores found at increasingly deep levels could be worked successfully. Once the oxidised ores nearer the surface were depleted, gold at depth proved too fine for efficient recovery by methods then available. The cyanide process which was proving so successful in the Transvaal was not effective because of the presence of tellurides in the ores. Attempts to use the Sulman-Teed process which substituted a bromo-cyanogen for potassium cyanide, were foiled here by the presence in the ore of lime and magnesia. These caused the residue left in the vats at the completion of the process to be so hard that dynamite was required to remove it. The race was on to discover a technological innovation which would unlock the tellurides' hold on Kalgoorlie's immense potential wealth.[12]

The solution was found by one of Davis's colleagues, Dr Ludwig Diehl, who headed a team of German chemists trying to resolve the problem. Diehl had been experimenting with the use of bromo-cyanogen, and found that if he ground the ores to a slime using tube mills, the process could be made to work. In mid-1895, Diehl joined Davis and W. F. Turner to form Gold Ore Treatment of Western Australia Ltd. to secure the state patent for the modified bromo-cyanogen process. The following year the London and Hamburg Gold Recovery Co. was formed, taking over the process, acquiring a share in Hannan's Brown Hill and continuing to employ Diehl's team, although

Diehl himself was not a director of the new company. The Golden Mile's large mines remained profitable for more than another decade. Other mines at Kalgoorlie and throughout Western Australia fared rather less well, but the district as a whole continued to be a major gold producer for many years.

By 1910, even the more successful companies were looking elsewhere for investment opportunities which would maintain their profitability. By this time Davis had withdrawn from direct participation in most of the Australian groups he had been part of, through not from London and Hamburg Gold Recovery.[15] He had indeed created a personal and financial connection between southern Africa and Australia, a link which was relatively direct. But it would not necessarily be accurate to consider this a direct *financial* link between southern Africa and Australia. It may well have been so, but that is impossible to verify. By this time Davis had acquired wide-ranging business and financial interests throughout the world. His close connections with Herbert Hoover, Bewick, Moreing & Co. and many German, French and British financiers meant that he was drawing money from many sources, any one or several of which could have provided the funds to support his Australian enterprises. Financial connections established in the 1930s were more easily identifiable as having southern African origins, although here too certainty as to the origins of the capital involved is impossible. Capital invested by Consgold in Australia clearly did not necessarily represent only profits from the company's South African mines. Referring to that capital as South African is justified only on the grounds that South Africa was at the time the company's most important single source of profit and, perhaps, because South Africa remained part of the company's name.

The period after the First World War saw Western Australia's gold mining industry, like so many others, facing the problems of rising costs against a relatively low fixed price for their final product. Even the richer mines were struggling. Throughout the 1920s, pressure for a devaluation of Australia's currency was building up, though such a policy was not universally favoured by the country's bankers and businessmen. By the time a massive devaluation did come in 1931, some Australians had put themselves into a position of being able to take advantage of the new, improved prospects for profitable gold mining operations.

One person who was particularly enthusiastic about these opportunities was W. S. Robinson – widely known simply as W. S. – one of the founding members of the Collins House Group, a name derived from the Melbourne building in which the constituent firms, connected in a bafflingly complex variety of ways, had their headquarters. This group was one of the major financial and industrial forces in Australia during the interwar period, reflecting, among other things, Melbourne's importance as a financial centre. It remains the country's premier mining finance group. Robinson's role in the development of this group was of paramount importance; the significance of the South African-based capital he introduced into Australia is rather more open to question.[14]

Robinson was born in Melbourne in 1876. A nephew of Australia's first Prime Minister, he started his working life as a farmer but quickly moved towards his real interest, mining finance. He became financial editor of the *Melbourne Age* when he was only 23, and gained considerable practical knowledge of Australia's mining areas through his partnership with his brother in the firm of Lionel Robinson, Clark & Co., which had helped secure finance for the 1890 Westralian gold boom. The firm moved to London where they became members of the Stock Exchange, specialising in mining shares.

After the war Robinson became Joint Managing Director of the Zinc Corporation and was on the board of a number of other important Australian companies. It is not at all surprising that, devoting considerable attention to building up his position in London, he came to occupy a fairly strong position, well placed to glean information useful to him personally, and to attract finance for his corporate activities.

In addition to the stockbroking partnership, Robinson also worked through two other companies, Austral Metals Ltd., a metal trading firm still active in London, and Austral Development Ltd., a London firm providing administrative services for a number of Australian companies (and which continues to do so through the Austral Trust Ltd.).[15] Although Robinson and his Australian colleagues certainly shared some interests with the South African group, it should always be kept in mind that each had distinct aims which were kept separate from their joint activities, and that, particularly in the case of the South African group, there appears to have been a strong desire to assure themselves of a position in Australian mining which did not directly involve Robinson, or at least kept his involvement limited or effectively under their control. A full understanding of South African finance in Australia during the interwar period would require further investigation of the activities of the South African group, particularly of Consgold and its subsidiaries that were not part of Robinson's group; that is beyond the scope of this essay.

In view of the close contacts Robinson had been developing within London's mining financial world, and with South African mining interests in particular, he must have been somewhat surprised, indeed angry, to learn late in 1926 that the Anglo-American Corporation was proposing to form a consortium to finance the development of the lead mines at Mount Isa in Northwest Queensland, on which Austral Metals already had an option. This was but one further stage in an undertaking that had faced constant financial difficulties, despite the fact that the ore bodies concerned were generally accepted to be relatively rich. William H. Corbould, who had reported on the mines in 1923 in his capacity as an experienced mining engineer, took the lead in attempting to find the money needed to bring the mines to production. One major obstacle was that there was no railway connecting Mount Isa to the coast. In January 1925, Austral Metals reached agreement with Mount Isa Mines Ltd. whereby the mining company would spend £100,000 on exploration to prove that a large, potentially profitable ore body existed. Austral Metals would then put up £550,000 to construct the necessary treatment plant.

In November 1925, in dubious, if not corrupt, circumstances, the Queensland parliament authorised the construction of a railway line. Investors remained unwilling to participate in the venture, in part, apparently, because a clause in the relevant railway act gave the Queensland government a first charge on the company's assets to cover inevitable early railway losses.[16] This might not have been an insurmountable obstacle if there had not also been general concern about the level of world lead prices and the availability of technology suitable for treating the Mount Isa ores.[17] Unable to meet the conditions of his agreement with Robinson, Corbould went to London to look elsewhere.

He would appear to have approached Carl Davis, chief consulting engineer to Anglo-American; although Davis was a friend of Robinson, the approach was obviously made without Robinson's knowledge. Anglo-American agreed to take up £50,000 shares in Mount Isa Mines Ltd. in exchange for a five-month option on the mine. If investigations during that time proved satisfactory, Anglo-American would take up a further £550,000-worth of shares, in return for which it was to be appointed the company's London agent and consulting engineer. When all shares had been fully paid, Anglo-American was to receive a commission of a further £60,000 shares credited as fully paid.[18]

Ernest Oppenheimer wanted his company to subscribe half the initial £50,000, hoping to bring Chester Beatty and his Selection Trust, the British South Africa Co., the British Metals Corporation (which had already been approached) Dunklesbuhler & Co., and Morgan, Grenfell & Co. into a supporting syndicate.[19] Morgan, Grenfell took a 7.5 per cent stake in the deal, £3,750-worth of shares,[20] but the final composition of the consortium is not certain. Among the 'quarters where it would be advisable to create interest'[21] was Robinson, who was offered a 25 per cent participation in the scheme by Vivian Smith of Morgan, Grenfell. Robinson informed Smith of the option Austral Metals already had on Mount Isa, but within 24 hours agreed to withdraw without requiring compensation. Why he did this is unclear. He later claimed that basically he did not want his companies to be connected in any way with Corbould or his associate A.J.M. Sharpe. While he was undoubtedly annoyed that Corbould had 'gone behind his back', this does not ring entirely true. Probably more to the point was that he had little to lose and that if the report Carl Davis, his 'dear friend', was to make proved satisfactory, Robinson would in any case be asked to share in financing further development of the mine, thereby saving himself the cost and risk of initial participation.[22]

However the syndicate was finally put together, the scheme went little further. When Davis reported on his preliminary investigations at the Black Star mine he indicated that, given the current price of lead, the oxidised ores near the surface would not return enough profit to justify the proposed investment. From limited information available regarding the sulphide ores at greater depth, it appeared that these would prove difficult to treat. Davis felt that extensive and expensive exploration would be required to be more certain. If ultimately the sulphide ores proved rich and amenable to efficient treatment, the mine might prove profitable, but, even on the most favourable assumptions at the time, he anticipated a maximum return on investment – which would have to be considerably more than the £600,000 then being proposed – of only 4.3 per cent. Davis advised Anglo-American to abandon the business.[23]

For some reason, Anglo-American chose not to give any public reason for not exercising its option. This, coupled with the fact that they did not participate initially in later schemes that Robinson devised, leads to the conclusion that there was rather more to the entire affair, particularly with regard to Robinson's relations with Anglo-American and Davis, than meets the eye.

Mount Isa was rescued soon after this by Leslie Urquhart, whose group, Russo-Asiatic Consolidated, was looking for new mines in an effort to avert disaster which loomed because of the collapse of its ventures in Russia, and by the American Smelting and Refining Co. After a long gestation period, Mount Isa finally paid a dividend in 1947, and subsequently proved very lucrative for its shareholders. Its great value was based not so much on lead, but rather on the vast copper deposits subsequently found there, and later on uranium. Robinson did not in fact share in this success, Mount Isa being virtually the only major Australian mining operation in which the Collins House Group was not involved. Robinson and his South African colleagues found ample alternative opportunities to work together.

Robinson was apparently unusual among his colleagues in being enthusiastic not only for promoting the general revival of the Australian mining industry, but also for the discovery and development of new mines. He was also interested in protecting Australian mining, particularly of zinc and lead, from American and/or German competition, and to ensure the maintenance of unimpeded outlets for Australian production. International marketing agreements could easily go hand in hand with financial co-operation, and Robinson involved himself in many such arrangements, covering virtually all the mineral producing areas of the British Empire and several other countries as well.[24]

Whether or not Robinson actually knew in advance of the precise timing of the Australian currency 'adjustment' of 1931, his professional and social contacts in London, particularly with C. J. Mills of *The Times* and various other people in influential financial and political circles, certainly gave him an inside track to useful clues. He claimed, perhaps a trifle sanctimoniously, that he was never involved in any breach of confidence because no information that he received from Mills was ever publicised. That may well have been so, but there was nothing in this to prevent his using such information to personal advantage.

In any event, in 1930, anticipating Australian devaluation and its consequent stimulus to gold mining, he began to put together a London-based syndicate to promote the Australian industry. This led to the formation of Gold Mines of Australia Ltd. (GMA) in April 1930, with J.A. Agnew, the chairman of Consgold, controlling directly or indirectly some 60 per cent of the new company. Most of the remaining shares were held by the Australian firms, the Zinc Corporation and the Imperial Smelting Corporation.

In the first two years of its existence, GMA was asked to consider taking up 201 proposals, some to reopen old workings, others involving new discoveries. Of the total, 154 were in Queensland, New South Wales and Victoria, fulfilling Agnew's expectation that GMA's activities would be concentrated in the eastern states. Agnew, who had worked in Western Australia for Bewick, Moreing & Co., obviously had plans of his own regarding that state, plans which did not necessarily include Robinson. Without further research into Consgold's activities in Western Australia, it is impossible to be certain about relations between Agnew and Robinson in this regard, but even in the papers which reflect the situation from Robinson's point of view, there is a definite impression created that Agnew considered Western Australia the more promising area and hoped to be able to limit Robinson's involvement with him there. That Agnew wanted to restrict Robinson's freedom of action is supported by Agnew's insistence that all significant decisions regarding GMA's work in Australia had to be made in London, in effect by him.

Robinson was not prepared to be shut out of such a promising area, leaving the potentially valuable pre-Cambrian formations to be exploited by others. Through GMA he took up some proposals in Western Australia, although he did not ignore opportunities elsewhere. A significant early acquisition for GMA, for example, was in Victoria's Bendigo goldfield. A company that had been formed to work there sought Robinson's support, and the Victoria government gave GMA further leases in the area. But whatever he did, he had to accept that he could not always lead and that Agnew had access to much greater capital resources over which he could exercise considerable, if not absolute control. Agnew, for his part, in 1932 strengthened his position with the formation of a subsidiary company, Gold Fields Australian Development Co., which brought together the Western Australian holdings which were showing particular promise, but in which Robinson does not appear to have participated in any significant way.

It was clearly not in either man's interest for them to be constantly at daggers drawn. In 1933 they reached a mutually acceptable agreement and formed the Western Mining Corporation (WMC) to take over work in Western Australia, leaving GMA to continue operations in the east.[25] The new company had an authorised capital of £1,000,000 in ten-shilling shares. Of the 336,000 shares fully registered by June, 1933, Gold Fields Australian Development held 40,000 shares and Consgold 15,000. Central Mining & Investment Corporation held 30,000 shares, as did Sir H. Strakosch and C. T. Pott of the Union Corporation. Other major shareholders included two Broken Hill companies and the Zinc Corporation.[26]

All too soon, WMC and other companies associated with GMA found themselves in need of further capital. Robinson sought once again to put together a financial package involving London/South African and American interests with which he was already associated. Given Agnew's attitude, it seems quite possible that Robinson might well have preferred to secure support from other sources, had he been able to do so. This may not be the case, but it is clear that Consgold's position not only in London, but in American mining financial circles as well, placed them in a dominant position and severely restricted the possibilities for Robinson to work without them.

Details of negotiations are not available, but it would appear that the suggestion for merging a number of Australian-based companies, with which Robinson was connected, came from the American quarter. A group of investors, apparently associated with Case, Pomeroy & Co., anticipated a substantial increase in the price of gold, and, on the basis of various geologists' reports, expected a corresponding increase in WMC's and GMA's business. To manage this, they felt that a large company able to tap finance in Britain and America would be needed.[27]

Robinson took the idea to London, and by the end of July 1934 had reached agreement whereby a new company, the Gold, Exploration & Finance Co. (GEFCA) would buy up shares, options and loans from WMC, GMA, Bendigo Mines Ltd., and seven smaller No Liability (NL) companies.[28] Its authorised capital was to be £2,000,000 in ten-shilling shares, 1,800,000 shares being issued immediately on the company's formation. Half the issued shares would be handed over to the major holders of the existing companies in exchange for their holdings and to the vendors who underwrote the entire issue and agreed to meet up to £20,000 of the issue expenses. From the £900,000 to be raised in cash, £375,000 was to be divided among the vendors in proportion to the interests they handed over to the new company: 25 per cent to the Austral Trust; 22 per cent to New Consgold; 14.5 per cent each to the Central Mining & Investment Corporation and the Union Corporation; and 12 per cent each to the Imperial Smelting Corporation and the Zinc Corporation. It was expected that the remaining £525,000 would provide adequate working capital to put the various enterprises on a sound footing.[29]

The remaining capital was easily subscribed, winning for Robinson warm congratulations from his close associate, Colin Fraser, for 'bringing all these strong groups' together. Fraser went on to say that 'the weight of the cash offered was astounding and indicated the desire of the UK public to participate in speculative gold mining enterprises provided they are going to get a good run for their money'.[30] Fraser may well have had an accurate view of UK investors' attitudes, but his congratulations seem somewhat exaggerated. Although the substantial number of vendors' shares issued was by no means unusual, the amount of actual cash made available could hardly be considered extraordinary. The publicly expressed view that GEFCA represented an 'important new Anglo-Australian mining enterprise'[31] was a further example of hyperbole. GEFCA's formation was in reality little more than the result of a financial group's seeking to reorganise itself, drawing on some public money in order to protect and expand its existing position. Given that GEFCA had virtually the same major backers as GMA and WMC, little new had taken place, with the possible exception of the direct involvement of American interests. There is also the possibility that Agnew saw the formation of GEFCA as another way of restricting Robinson's scope for action and participation in Consgold's wider-ranging Australian activities.

It is obvious that there continued to be a measure of friction between Agnew and Robinson. Why else would Robinson have felt the need to characterise L.S. Amery, chairman of GEFCA's London board until his appointment as Secretary of State for India in 1940, as 'neutral'? The other directors were A.J. Brett of Central Mining & Investment, P.E. Marmion of Imperial Smelting and the Burma Corporation, C.T. Pott of the Union Corporation, and Robinson. An Australian advisory committee consisted of Fraser, Robinson and Sir Walter Massy Greene. From the very beginning there was conflict as to whether real power should lie with the London board or with the Australians on the spot. Generally the London board won. Their hold on the purse strings was crucial in attempting to meet the immediate pressing financial problems that surfaced all too quickly.

When GEFCA was formed, the initially high levels of enthusiasm led to the formulation and commencement of extensive, expensive development programmes. By January 1935, WMC, GMA and Bendigo Mines were in serious need of further cash injections from GEFCA, whose backers were considered by some, naively to say the least, to have 'practically unlimited' resources[32] – a view far from universally shared. It is difficult to avoid the conclusion that if the full extent of proposed development schemes and their costs had been appreciated earlier, enthusiasm for the flotation would have been very much reduced. The vendors/underwriters could well have found themselves in the position of having to take up a substantial portion of the shares offered to the public.

A further issue of 20,433 shares was made at a 3/6d (£0.18) premium; enthusiasm had obviously not evaporated. A further 3,400 shares were issued at par.[33] In November 1935, the Zinc Corporation arranged for loans to GEFCA of up to £150,00 at 5 per cent interest, agreeing to take up 33.33 per cent of the loan themselves. Central Mining & Investment and the Union Corporation agreed to provide up to 16.66 per cent each, while Anglo-American, in its first direct participation, promised 12.5 per cent, with Austral Trust agreeing the small remainder.[34] Only £121,000 of this loan was actually called, but by July 1936 GEFCA had to issue £500,000 in registered convertible notes maturing in 1942, payable with a £30 premium. Pressure on GEFCA was increased by the fact that, between 1935 and 1942, WMC, Bendigo Mines and another company in the group, Central Norseman Gold Corporation, NL, borrowed a total of £1,596,489. WMC and Central Norseman did pay interest on the loans, but Bendigo was unable even to maintain these.[35]

Over the years, the value of GEFCA's holdings diminished drastically, and returns on investments made were virtually nil. Consgold and the other South African-based companies involved did not withdraw, although they provided no further major capital injections after 1936. Consgold failed to build very substantially on the base it had created through GEFCA and Gold Fields Australian Development until the 1960s and, after faltering in the 1970s, again in the 1980s. This is blamed by the company on a lack of clear objectives at the time,[36] a point which might well mean that some of the manipulative skills attributed to Agnew and his desire to restrict Robinson's activities have been exaggerated. Only further research can clear up this point, as is the case with many other points raised in this paper.

From the Australian point of view, GEFCA's support was crucial to WMC, at a difficult time in its history, when it was still trying to establish itself. That support enabled the company to go on to become a highly profitable, thriving organisation. South African capital, channelled through Robinson, played a major role in providing that support. For the South African-based companies, much more was yet to come.

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NOTES

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1. S.Katzenellenbogen, *Railways and the Copper Mines of Katanga* (Oxford, 1973),

pp.13–14 and 26–8.

2. L. Vail and L. White, *Capitalism and Colonialism in Mozambique: A Study of Quelimane District* (1980), pp.108, 110–116, 235.
3. S.E. Katzenellenbogen, 'British Businessmen in German Africa, 1885–1914', in B.M. Ratcliffe (ed.), *Great Britain and Her World, 1750–1914: Essays in Honour of W.O. Henderson* (Manchester, 1975), pp.237–62.
4. D. Kaplan, 'The Internationalisation of South African Capital: South African Direct Foreign Investment in the Contemporary Period', *African Affairs*, Vol. 82 (1983), pp.465–94; R. Turrell with J.J. Van Helten, 'The Rothschilds, the Exploration Company and Mining Finance', *Business History*, Vol. XXVIII (1986), pp.181–205.
5. P. Johnson, *Consolidated Gold Fields; A Centenary Portrait* (1987), p.38.
6. Ibid., pp.158–9.
7. G. Blainey, *Mines in the Spinifex: The Story of Mount Isa Mines* (Sydney, 1960), pp.116–18.
8. See the Annual Report of Union Minière for the 1970s. The company had a similar lack of success in Canada.
9. S. Katzenellenbogen, 'Cyanide and Bubbles: Patents and Technological Change in Gold and Non-Ferrous Metals Treatment', *Proceedings of the Second International Mining History Conference*, Bochum, Germany, Sept., 1989 (forthcoming).
10. G. Blainey, *The Rush that Never Ended: A History of Australian Mining* (Melbourne, 3rd ed., 1978), pp.2 and 243.
11. The preceding is based on information gathered from *The Stock Exchange Official Intelligence*, *The Stock Exchange Official Yearbook* and the *Directory of Directors*, and on the biographical article on Davis by Richard Davenport-Hines in D.J. Jeremy (ed.), *Dictionary of Business Biography*. On Davis's activities in German Southwest Africa, see my 'British Businessmen'. Davis's career in Northern Rhodesia, which was most significant during the interwar years and later, is covered fairly extensively in Sir Theodore Gregory, *Ernest Oppenheimer and the Economic Development of Southern Africa* (Cape Town, 1962), passim.
12. Katzenellenbogen, 'Cyanide and Bubbles'; Blainey, *The Rush that Never Ended*, pp.199–201.
13. Ibid. and various years of the directories cited above. The records of defunct companies held by the Public Records Office at Kew (BT 31) do also provide some useful information, but are more often than not disappointing because many of the reports and other documents deposited with the Registrar of Companies are destroyed rather than preserved some time after a company is liquidated.
14. P. Richardson, 'The Collins House Group, 1915–1949', a paper presented to the Conference of the Economic History Society of Australia and New Zealand, Monash University, 1984.
15. In his later years, Robinson began writing his memoirs. Unfinished when he died in 1963, they were edited by Geoffrey Blainey and published as *If I Remember Rightly: The Memoirs of W.S. Robinson* (Melbourne, 1967). A more technical view is provided by G. Lindsay Clark, *Built on Gold: Recollections of Western Mining* (Melbourne, 1983), pp.1–3. This is an official history of the Western Mining Corporation, published to mark its fiftieth anniversary. See also Blainey, *Mines in the Spinifex*, pp.45 and 106–7.
16. This account is based on Blainey, *Mines in the Spinifex*, pp.80–119, and *If I Remember Rightly*, pp.140–43. Also relevant are Corbould's memoirs, edited by his grandson, Ian Hore-Lacey and published as *Broken Hill to Mount Isa: The Mining Odyssey of W.H. Corbould* (Melbourne, 1981).
17. Treatment of lead ores relied primarily on specific applications of the flotation process which had to be adapted by experimentation to different ores. Known flotation techniques used to treat other ore deposits would not necessarily be effective with those found at Mount Isa. See Katzenellenbogen, 'Cyanide and Bubbles'.
18. University of Melbourne Archives (UMA), Papers of W.S. Robinson (WSRP),

folder labelled 'Mt. Isa Mines' (MIM), Letter from Anglo-American Corporation of South Africa to Morgan, Grenfell & Co., 16 November 1926.

19. WSRP/MIM, Memorandum signed V.H.S. (Vivian Smith) dated 9 Nov. 1926.
20. WSRP/MIM, Morgan, Grenfell & Co. to Anglo-American Corporation, 17 Nov. 1926, cover letter and formal agreement to participate.
21. The phrase was used in the memorandum cited above, note 18.
22. WSRP/MIM, Robinson to G.R. Fisher, Chairman, Mt. Isa Mines, personal, 18 Feb. 1926; Blainey (ed.), *If I Remember Rightly*, p.142.
23. WSRP/MIM. A Copy of Davis's telegraphed report was forwarded by Anglo-American, Johannesburg to J.S. Wetzlar, 19 April 1927.
24. Richardson, 'Collins House', pp.20–1.
25. Archival material on this period of GMA's history is scarce, if not impossible to find. The preceding summary is based primarily on Clark, *Built on Gold*, pp.1–25.
26. UMA, Archives of the Western Mining Corporation (AWMC), file no. 4/9/12, 'Schedule of Shareholders Register, 13 December 1934'.
27. UMA, Archive of Broken Hill Associated Smelters (ABHAS), private papers of Sir Colin Fraser (CFP), file no. 1/93/3, Confidential telegram from Robinson in New York to (apparently) Colin (later Sir Colin) Fraser, one of Robinson's closest friends and Chairman of WMC, dated 25 May, 1934.
28. The No Liability form of company organisation in Australia was somewhere between a simple partnership and a full-scale limited liability company. It had the obvious advantage of limiting individual risk and avoiding the costs and administrative complexities involved in the formation of a fully limited company. No Liability companies could be publicly quoted; but two of the companies referred to here were not.
29. Details were communicated by Robinson to his colleagues in Australia in a series of telegrams, copies of which are in the CFP. These details are also found in the official GEFCA prospectus, copy in AWMC, file no. 8/4/2.
30. CFP, file no. 1/127/34, Fraser to Robinson, 3 Aug. 1934.
31. Sydney *Herald*, 21 July, 1934.
32. CFP, file no. 1/121/3, Unsigned Memorandum dated 15 Jan. 1935, and Memorandum 'Bendigo', most probably by Robinson, 30 Jan. 1935.
33. AWMC, file no. 8/35/27, Memorandum by L. Edwards, 'Gold Exploration and Finance Co. of Australia Ltd Income Tax – Federal and State', 22 Nov. 1943.
34. AWMC, file no. 8/1/1, Minute Book of GEFCA Directors' Meetings, meeting on 6 Nov. 1935.
35. Memorandum by Edwards cited above, Note 33.
36. Johnson, *Consolidated Gold Fields*, p.159. Johnson's review of Consgold's Australian operations makes no mention of GEFCA and the other Robinson companies.

STRATEGIC RESPONSES TO FOREIGN COMPETITION: THE BRITISH COAL INDUSTRY AND THE 1930 COAL MINES ACT

By TREVOR BOYNS

The interwar years were a period of great stress for the British economy in general and the staple industries in particular. Change was needed and the general concern was with how the most efficient transfer of resources from the staple industries to more productive sectors could be effected. Within the staple industries themselves the major question was how best could output be concentrated in the most efficient units. In the 1920s the emphasis of government policy was to encourage the voluntary rationalisation of industry from within as a means of reducing real costs, but in the 1930s this was replaced by a policy of more direct intervention aimed at reducing total output. It was in relation to the coal industry that this change of emphasis was first signalled, with the passing of the 1930 Coal Mines Act.[1] Whilst the 1926 Mining Industry Act had merely encouraged voluntary amalgamations, the 1930 Act established a Coal Mines Reorganisation Commission endowed with powers to prepare its own schemes of amalgamation where little or no initiative was forthcoming from the industry.

Not surprisingly, therefore, the 1930 Act has been singled out for detailed scrutiny by economic historians, with the general consensus of opinion being that, for one reason or another, the Act failed to achieve its main aims. It has been asserted that it was ineffective; based on erroneous arguments; and actually retarded rather than aided rationalisation. A typical view is that 'not a single compulsory amalgamation was effected [by the Reorganisation Commission] during the 1930s – the result of fierce opposition from the owners, inherent contradictions within the 1930 Act itself, and the fact that no convincing evidence existed that large-scale operation in coalmining guaranteed either greater efficiency or profitability'.[2] It is the contention of this article however that the case against the 1930 Coal Mines Act is far from proven. It will be contended that the arguments of the main critics of the Act, many of which have remained unchallenged by the most recent history of the interwar coal industry,[3] contain a number of inconsistencies, stemming both from logical flaws and the use of unsound supporting statistical evidence. This has led, in the author's view, to the Act being unfairly castigated in the past. Whilst the nature of the subject makes it difficult to prove any particular case, this analysis suggests that either the grounds for criticism of the 1930 Act must be shifted or alternatively that the Act must be accorded more plaudits than has hitherto been the case.

I

The main criticism of the 1930 Act has stemmed from the inability of the Coal Mines Reorganisation Commission to effect even a single compulsory amalgamation.[4] Under Part II of the Act the Commission was ostensibly given the power to enforce amalgamations within the mining industry if they did not occur voluntarily. However the one scheme that the Reorganisation Committee submitted to the Railway and Canal Commission for vetting, that for West Yorkshire, was thrown out and subsequently had to be dropped because it was found not to satisfy all the criteria laid down for a compulsory scheme to be implemented. It has been largely agreed that the failure of this scheme to meet these criteria – that the amalgamation should be in the national interest; that it would result in lower costs, either in production or in the disposal of the coal; that it would not be financially injurious to any of the undertakings proposed to be amalgamated; and that its terms were fair and equitable to all persons affected – implied that any compulsory scheme that the Reorganisation Commission might devise would be similarly refused.

Whilst this latter conclusion might be correct, the failure of the West Yorkshire scheme does not necessarily indicate any failure in the aims of Part II of the 1930 Act since the problem could be that the criteria were too wide-ranging for them ever to be met. Thus the failure of the Act could be in the means which it gave to the Reorganisation Commission to pursue the end of compulsory amalgamations rather than with the end itself. Thus less stringent criteria and/or more powers may have enabled the Commission successfully to have carried through compulsory amalgamations in the 1930s.

II

To the argument of non-achievement, Kirby has argued that the Act had the exact opposite effect to that intended.[5] Thus, whilst it not only failed to achieve any compulsory amalgamations, it also, due to the inherent inconsistencies between Parts I and II of the Act, led to a 'perceptible slowing down' in the number of voluntary amalgamations after 1 January 1931 when the Act came into force. Thus Kirby argues that by setting up a series of marketing schemes for each of the colliery districts, Part I of the 1930 Act guaranteed every colliery a share of the total market and thereby provided each firm with the means of continued survival, thus lessening any market pressures that there might have been for further amalgamations. Since it is impossible for anyone to know how many amalgamations would have occurred if the Act had not been passed, Kirby, in an attempt to support his case, focuses his attention on the number of amalgamations which actually took place between 1928 and 1936. This raises two fundamental issues: firstly, why are amalgamations considered important? and secondly, what is the most reliable way of measuring them?

In the context of the interwar coal industry amalgamations have been an important object of study because of the potential effect that they could have upon the industry's competitive position. On the assumption that economies of scale did exist, the creation of larger undertakings through amalgamations could lead to increased efficiency, thereby improving the ability of the industry to compete with foreign producers. The extent of these potential efficiency gains however would depend on the form of amalgamation, since different types of mergers give rise to different potential economies. Furthermore, size too would play an important role – *ceteris paribus*, the merger of two small concerns seems less likely to have the same impact upon the industry's efficiency as that between two large concerns. What is significant therefore is not simply the number of amalgamations, but their type and the size of the concerns involved.

A consideration of the official lists of mergers after 1926[6] suggests that amalgamations in the coal industry in the interwar years were of four basic types: the merging of contiguous undertakings; 'loose-knit' amalgamations, that is, the merging of essentially non-contiguous undertakings; financial mergers; and 'others'. It seems likely that the potential impact of each type on the industry's efficiency would be different, but to what extent? Of the four types, two probably had little if any direct impact upon efficiency, namely 'others' and financial mergers. 'Others' included, for example, the merging of the coke oven businesses of a number of colliery undertakings and the formation of a company in north Staffordshire to purchase royalty rights. Financial reorganisations are perhaps a slightly more ambiguous group since it is not always clear what was implied. Where it merely meant the restructuring of an already extant group, as in the case of the formation of Welsh Associated Collieries Ltd. in 1930, the potential gains were probably limited, particularly if no new capital was raised. Furthermore in such instances any gains which were possible after the restructuring should also have been feasible prior to it and thus the merger would not increase the potential for improving the health of the industry. The exclusion of such mergers, which would be to a large extent based on a subjective evaluation, would thus leave us essentially with those mergers involving contiguous undertakings and those of the 'loose-knit' variety. But even with these mergers it is necessary to formulate some method of weighting each merger if a relevant measure of their potential impact is to be obtained.

To measure the potential effect of any merger *a priori*, however, is obviously very difficult and in most cases there is also no satisfactory way of measuring the impact even after the event, since this implies knowledge of what would have happened had the merger not taken place.[7] However if economies of scale exist then the potential for improvement will in some way be related to the 'size' of the merger, but how should this be measured, and should the concern be with the size of the newly formed group or, if one concern takes over another, with the increase in the size of the former? Whilst 'size' might best be indicated by output, such data does not exist and thus Kirby focused his attention on the employment statistics contained in the official returns. However in any industry which is in decline and where part of the drive towards improved efficiency implied a movement towards greater mechanisation, the use of employment levels to measure the relative effect of mergers over time must be suspect.

Thus it is clear that there are a number of important, but largely insurmountable, problems encountered when considering the pace of amalgamations. As a result of these problems it is far less easy to draw straightforward conclusions from the statistical returns accompanying the 1926 and 1930 Acts than is made out. Nevertheless Kirby's conclusion that there was a 'perceptible slowing down' in the number of voluntary amalgamations after 1930 is based solely on the 'fact' that whilst there had been 26 mergers in the period 1928–30 involving concerns employing 212,260 workers, in the longer period 1931–36 there were only 32 mergers involving 164,200 men.[8] Kirby's measuring rod, however, can be criticised not only *a priori* grounds, but also on the grounds of empirical accuracy. Certain authors have noted that the statistical returns accompanying the 1926 and 1930 Acts are imperfect, suffering from double-counting, particularly between 1928 and 1930, implying that Kirby's case for a decline in the level of mergers is overstated.[9]

A closer examination of the statistical returns, however, reveals that not only is the data inconsistently presented, it is also far from complete. On the inconsistency front, the double-counting is not merely confined to 1928–30, and employment data is omitted for several amalgamations between 1934 and 1936. Of perhaps greater significance is that the returns are incomplete for the crucial period after 1930, as a cursory analysis of amalgamations in south Wales shows. Thus there is no mention of the purchase by Powell Duffryn in 1931 of the Albion Steam Coal Co. Ltd.[10] or that by Welsh Associated Collieries Ltd. of the collieries belonging to Lockets Merthyr Collieries (1894) Ltd. in 1932.[11] The several acquisitions by Cory Bothers & Co. Ltd. during the 1930s are also omitted from the official returns.[12] Since it seems unlikely that this problem is confined to south Wales, a wider study of amalgamations in the industry would perhaps reveal a major measurement problem here. Thus it appears that the figures for the post-1930 period should be revised upwards, not downwards, thereby undermining Kirby's assertion that there was a 'perceptible slowing down' in the rate of amalgamations. His argument that Part I of the 1930 Coal Mines Act retarded amalgamations is further undermined by a significant number of mergers in 1937 and 1938 which he ignores by ending his statistical analysis in 1936.[13]

The 1930 Act therefore did not prevent amalgamations from occurring; but did it reduce their likelihood and, as has been implied, prevent some which would have improved the health of the industry from occurring altogether? Under the quota system of Part I, all collieries, irrespective of efficiency, were given a quota for each period equal to a set percentage of their standard tonnage. By reducing output below capacity at all pits, costs in the industry were undoubtedly raised, and the more efficient firms were thus given an incentive to acquire extra quotas in an attempt to raise output closer to capacity. In the early period of the Act's operation excess quotas were bought and sold,[14] but the long term solution required the acquisition of the less efficient concerns by the more efficient, the closing down of the former and transferring their quotas to the latter. It is undoubtedly the case that the quota system, through guaranteeing them sales, raised the value, or acquisition price, of the less efficient pits but it is not clear that this actually prevented their purchase by more efficient concerns. As long as the cost savings at the efficient pits resulting from increased output outweighed the costs of purchasing the extra quotas then there was sufficient incentive for colliery owners to pursue this course.

Despite this incentive it is generally considered that by raising the purchase price of less efficient pits, Part I of the 1930 Act reduced the likelihood of amalgamations. However, like the voluntary marketing schemes before it, the cartel scheme provided a forum within the coal industry for the discussion of common problems and the formulation of collective solutions, and thus may have actually encouraged amalgamations. Concern with sales under the quota system undoubtedly played a role in the merger in south Wales between the Powell Duffryn Steam Co. Ltd. and Welsh Associated Collieries Ltd. in 1935.[15] Further examples of significant mergers, that is ones involving either large numbers of men or giving the newly formed concern a large element of control over a particular colliery district, can also be found in the industry after 1930. One such is the formation of Bairds & Dalmellington Ltd. in 1931 which, following further acquisitions in 1934, came to control 72 per cent of output in Ayrshire.[16] Furthermore, groups formed prior to 1930, like Manchester Collieries Ltd., Yorkshire Amalgamated Collieries Ltd. and Ocean Coal & Wilsons Ltd. do not appear to have been greatly affected by the Act, all continuing to acquire other concerns from time to time after 1930.

On closer scrutiny therefore the evidence does not support Kirby's claim that the 1930 Act slowed down the pace of voluntary amalgamations after 1930 and neither is there conclusive proof that even if Parts I and II of the Act were inconsistent this prevented important mergers from occurring. Thus Kirby's case against the 1930 Act is far from proven. What of the claims of Buxton that the Act was altogether unnecessary and misconceived?

III

Buxton[17] has focused his attention on the validity of the main assumption underlying Part II of the 1930 Coal Mines Act: that amalgamations would have improved efficiency. He has argued that this assumption is false. With concentration in the industry already well advanced by 1930 in most coalfields, Buxton concludes that the bulk of the commercial economies of scale had already been achieved, and as far as technical economies of scale are concerned he argues that contrary to the view of the Samuel Commission small mines could achieve technical economies equally as well as large mines. Thus he concludes that Part II of the 1930 Act was largely irrelevant to the needs of the industry, it was both unnecessary and misconceived. However, merely to state that concentration was already well advanced in most coalfields does not, of itself, prove that the benefits of such concentration were actually being achieved or that further amalgamations could not have brought more gains. To assume that all previous mergers were well conceived, that they had been successful in achieving all their potential gains, as Buxton appears to do, is to assume away the very charge of entrepreneurial failure which he is attempting to counter.

Buxton's work neither proves that the existing amalgamations had actually realised all their potential gains nor disproves that further commercial economies existed. Similarly, when considering technical or production economies, with which much of his article is really concerned, Buxton's statistical evidence showing that such economies could be achieved equally well by both large and small mines does not prove that further amalgamations of small pits to form larger ones would not have led to *further* economies. As Johnson pointed out at the time, none of Buxton's evidence could categorically answer the question 'whether or not further amalgamation in the coal industry would have led to greater efficiency?'[18] This of course is the major issue at the heart of the debate concerning government intervention and the efficacy of the 1930 Coal Mines Act. The main problem in answering this question however is the lack of appropriate data showing the effects of any post-1930 merger, but some evidence relating to the effects of the 1935 merger between the Powell Duffryn Steam Coal Co. Ltd. and Welsh Associated Collieries Ltd. is available and is used below in an attempt to throw some light on this issue.

Given Buxton's views it would seem initially that such a study would have little to recommend it. Both the parties to the merger were already large in 1930, Welsh Associated with an annual output of 7.25 million tons and Powell Duffryn 6.7 million tons,[19] and the level of concentration in the south Wales coalfield was already high. Thus in the non-anthracite part of the coalfield where both concerns operated, the largest five firms in 1930 together controlled 63 per cent of output.[20] By 1938 this had increased to over 70 per cent[21] due to the merger between

Powell Duffryn and Welsh Associated resulting in Cory Brothers being added to the list of the five largest concerns. However, although the level of concentration was already high in 1930, it would not be valid to contend, as Buxton does, that 'neither on the productive nor on the commercial side could rationalisation, by reorganising the industry into larger units, hope to achieve any substantial increase in economies of scale'.[22]

IV

In 1935 the Powell Duffryn concern developed into the largest and most important company in the whole of the British coal industry following its merger with Welsh Associated Collieries Ltd.[23] Whilst Welsh Associated, and its forerunner, the Cambrian combine – a 'loose-knit' amalgamation – had lurched from one financial problem to another as a result of its haphazard policy of colliery acquisitions, Powell Duffryn's concentration on long-run considerations, in particular the continued development of new, largely contiguous territories exploited by modern, low-cost collieries equipped with the most up-to-date technology, had provided it with a sound reputation in the financial markets. On acquiring control of Welsh Associated's pits, Powell Duffryn began to modernise and rationalise its operation along the lines already introduced at its own pits and along those which Welsh Associated had been unable to achieve because of a lack of funds. Thus, £235,000 was spent at the Merthyr Vale colliery between 1935 and 1939 on erecting new power plant, introducing coal-face machinery and new underground haulage engines, enabling production to be maintained whilst simultaneously reducing the workforce by 30 per cent.[24] Similar changes at the Bwllfa pits,[25] costing £102,000, brought productivity improvements of 10 per cent.

General improvements were effected at former Welsh Associated pits through the reorganisation, centralisation and general improvement of power provision, and the introduction of mechanisation and more up-to-date methods of working. Further gains came from the rationalisation of production in the most efficiently sited pits which was made possible as a result of the acquisition of control over contiguous properties. Thus at various times during the period the company was able to close the Cwmcynon, Cwmaman and Ynysfeio collieries and work their remaining reserves more efficiently from the Penrikyber, Fforchaman and Maerdy collieries respectively.[26] Perhaps Powell Duffryn's most spectacular achievement was the phoenix-like resurrection of the Albion colliery. When the colliery was acquired in 1931 its best seams had been exhausted, and losses of about £100,000 had been accumulated between 1924 and 1929.[27] The pits however were ideally suited to work some 72 million tons of reserves of the neighbouring Great Western and Lewis Merthyr concerns, previously acquired by Powell Duffryn, but which could not be worked easily or profitably by the pits belonging to those concerns. Powell Duffryn thus acquired the Albion concern for about £40,000, re-modelled the colliery at a cost of £218,000 and, through the transfer of reserves, secured for it an economic future.[28]

Whilst the change in the fortune of the Albion colliery could not have been achieved until amalgamation brought about a unification of ownership, many of those effected at other pits formerly controlled by Welsh Associated Collieries could have been secured without it. With its internal sources of finance severely stretched simply coping with day-to-day affairs, however, the company was unable to carry out the modernisation of its collieries and the more efficient provision of power supplies. Furthermore the external problems of the industry meant there were substantial difficulties in raising finance from the capital market, though as the experience of Powell Duffryn shows this was not impossible. Thus in 1928 Powell Duffryn raised £4.2 million of loans to finance several acquisitions including those of the Great Western and Lewis Merthyr concerns and the shipping agency of Stephenson, Clarke & Associated Companies Ltd.[29] But Powell Duffryn was doing so from a basis of strength, namely low-cost, efficient collieries and a sound profit record. The Cambrian combine on the other hand was not so well placed and even after the formation of Welsh Associated the concern had to shelve plans for the raising of £2 million of new loan capital because it was adjudged that the market was not ripe for its placement.[30]

The differing ability of these two concerns to raise funds in the 1930s thus appears to have been related to their underlying economic soundness. The past success and the long-run outlook of Powell Duffryn enabled it easily to raise the necessary capital but the inherent unsoundness of the Cambrian combine, the result of ill-conceived motives for amalgamation, meant that it was unable to obtain finance when it was required. The ability to raise finance on acceptable terms was thus not an external factor influencing entrepreneurs but one which they themselves determined by virtue of their past track record. It was thus an internal or endogenously determined factor. If in practice a lack of finance proved to be a factor inhibiting amalgamations then this must have been because entrepreneurial failings in the past had made the capital market loath to put up further finance. Given the position in the world and United Kingdom markets, coal companies were not generally attractive to the capital market in the interwar years but the Powell Duffryn case shows that it was still possible for companies with a proven record to raise funds.

V

The effects of Powell Duffryn's merger with Welsh Associated in 1935 and its other acquisitions make it clear that economies and cost reductions could be gained in the 1930s from further amalgamations.

TABLE 1
EFFECTS OF THE POWELL DUFFRYN MERGERS AND TAKE-OVERS, 1928–38

	Tonnage Saleable Year[1] 1928	1938
number of legally distinct companies	25	1
number of working collieries	86	49
output (tons)	11,772,941	11,830,570
average annual output per working colliery (tons)	136,894	241,440
percentage of South Wales output	28.8	33.6
number of men employed	52,079	37,507
aggregate profit/loss on Tonnage Saleable basis	-£841,962	£520,669

Note: 1. Annual output of coal available for sale, i.e. gross output less dirt and colliery consumption.

Source: Powell Duffryn Ltd., *A Short Survey of the Organisation, Growth and Development of Powell Duffryn* (private circulation, 1946), p.17.

The figures in Table 1,[31] whilst both understating the effect of amalgamation, since many of the gains had not been fully realised by 1938, and overstating it, since other favourable influences such as improvements in demand are not distinguished, undermine Buxton's contention that no economies could be generated by further amalgamations in the 1930s.

The problem with Buxton's analysis stems from his rigid distinction between production or technical economies on the one hand and commercial economies on the other. By equating the former with the size of mine and the latter with the size of undertaking, Buxton ignores important practical considerations, and it is this which apparently lies behind the debate between himself, Kirby and Johnson regarding the appropriate unit which should form the basic element in the size-efficiency relationship.[32] Whilst Buxton may be theoretically correct in asserting that small mines could mechanise as easily as large ones and thus enjoy similar productivity levels, he seems to ignore the practical problem of cost. The introduction of mechanised cutting and conveying in mines involves an alteration of the whole production process and also involves changes in power provision. Small, independent mines were often unable to mechanise in the mid-1920s because of a lack of finance. By becoming part of a larger group they could hope to overcome this problem, but as the Cambrian combine example shows access to finance could not be guaranteed. Thus, in practice, the achievement of technical economies, whether at large or small mines, was related to the size of undertaking and further amalgamations could have improved the rate at which technical economies were achieved.

Another point to emerge from a study of the successful concerns in the south Wales coalfield between the wars is that continued viability seems to have been the result of operating compact areas of the coalfield. In concentrating their resources geographically, concerns like Powell Duffryn, Ocean, and Tredegar were able to achieve technical economies in power distribution, and other gains in efficiency resulting, for example, from the possibility of transferring reserves between contiguous undertakings so that they could be worked more cost-effectively from the best-placed pits. Such activity enabled the problem of mineral royalties to be circumvented even before the passing of the 1938 Coal Mines Act which nationalised the coal royalties and reduces the force of the conventional criticism that the ownership of royalties in the 1930s created a major obstacle to amalgamations.

The views of the Reid Committee on this issue have largely been unchallenged.[33] After arguing that the ownership of the mineral resources had generally led to the opening out of mines whose scale was sub-optimal, the Committee implied that the 1938 Act would not alter this situation: 'The transfer of the ownership of the minerals to the State, by the Coal Act, 1938, cannot, by reason of the conditions attaching to the transfer, appreciably affect the size or shape of existing leaseholds'.[34] However what was important was not the pattern of leaseholds on the surface, but rather what was going on underground, namely from which pit the coal under any particular property was being worked. If it could be worked from more than one set of pits under the control of a single company then irrespective of which of the company's constituent companies had originally worked those reserves they could, and should, now be worked from the most efficiently sited pits, thereby raising the industry's efficiency. Thus amalgamations of contiguous pits, even before 1938, could enable the royalty problem to be by-passed.

VI

The above re-examination of the arguments of Kirby and Buxton has suggested that their criticisms of the 1930 Coal Mines Act are based upon unproven assertions. Consideration of certain mergers in south Wales has shown quite clearly that profitability and efficiency after 1930 could be improved by further amalgamations. This finding refutes Buxton's main argument and indicates that the aims of Part II of the 1930 Coal Mines Act had a sound basis. Further, although the 1930 Act may have done nothing actively to encourage the Powell Duffryn/Welsh Associated merger it certainly did not prevent it from occurring.

Any inconsistencies in practice in the operation of Parts I and II of the 1930 Act were not so overwhelming that they actually prevented any significant mergers; if the perceived gains of a merger were strong they could overcome any negative influences that the 1930 act might have had.

The Powell Duffryn case, together with the deficiencies of the post-1930 Act official lists, therefore undermines the Buxton and Kirby criticisms of the 1930 Coal Mines Act so far as south Wales is concerned. Whether this is a general conclusion will require further research on the records of colliery companies in other coalfields, but the implication of this merger is clear: further mergers after 1930 could and did benefit the industry. This raises the possibility that if the 1930 Act had done more to encourage mergers, by for example providing financial help to voluntary amalgamation schemes, or by compelling such schemes, then the industry's health could have improved. The only criticism of the 1930 Act to which the present research lends support is that it failed to achieve any compulsory amalgamations. This was not, however, because it was inconsistent or misconceived, but rather because Part II did not have sufficient teeth.[35] It is not denied that such a solution would have involved major practical problems, especially in regard to the opposition of the coal owners to any form of compulsion and the political problems inherent in intervening on a large scale in a major staple industry in the interwar years. However it is being suggested that if the powers that were given to the Coal Mines Reorganisation Commission had been more effective and/or the criteria laid down for accepting any compulsory amalgamation had been relaxed then positive results were possible. They were possible because more amalgamations could have been stimulated and because – as we have seen – there were still efficiency gains to be obtained from such developments after 1930.

It remains to say something on the question of entrepreneurial efficiency which was at the heart of Buxton's original article. Buxton sought to absolve the coal owners from blame by arguing that further mergers would have achieved nothing in terms of improved profitability and that the problems faced by the industry were external. Whilst the latter is true it is not clear that this implied there was little the entrepreneurs could have done to overcome them. The Powell Duffryn case not only shows that Buxton's central argument is wrong, it also shows what some colliery owners could achieve by their own enterprise. It seems feasible that similar activity in other coalfield districts may also have improved the health of the industry and to the extent that it did not occur then there may have been entrepreneurial failure. Furthermore there was failure in that not all mergers prior to 1930 were successful, contrary to Buxton's implicit assumption. The financial problems of the Cambrian combine were not so much due to external factors, that is, the unwillingness of the capital market to invest in colliery companies because of the market situation, but rather due to the group's past poor performance. Successful firms could and did obtain finance despite the external circumstances facing the industry, and thus finance was not a truly exogenous constraint on the industry. The position would thus seem to be that entrepreneurial performance, as one might expect, was variable in the interwar mining industry, and there were some successes and some failures.

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NOTES

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1. See for example, S. Pollard, *The Development of the British Economy, 1914–80* (3rd ed. 1983), p.68 and pp.104–6.
2. N.K. Buxton, 'Economic Growth in Scotland between the Wars: The Role of Production Structure and Rationalization', *Economic History Review*, 2nd series, Vol. XXXIII (1980), p.551.
3. B. Supple, *The History of the British Coal Industry Vol. 4. 1913–46: The Political Economy of Decline* (Oxford, 1987).
4. G.C. Allen, *British Industries and their Organization* (1951), pp.76–7; M.W. Kirby, *The British Coalmining Industry, 1870–1946: A Political and Economic History* (1977), pp.156–7.
5. Kirby, *The British Coalmining Industry*, esp. Ch. 9, and M.W. Kirby, 'The Control of Competition in the British Coal-Mining Industry in the Thirties', *Economic History Review*, 2nd series, Vol. XXVI (1973), p.282.
6. Mining Industry Act 1926, *Reports by the Board of Trade under Section 12 on the Working of Part I of the Act* (P.P. 1928 on).
7. Similar problems arise in measuring the effects of mergers on industrial concentration – see K.D. George and B. Curry, 'Industrial Concentration: A Survey', *Journal of Industrial Economics*, Vol. XXXI (1983), pp.238–47.
8. Kirby, 'Control of Competition', p.282.
9. Supple, *History*, p.309, esp. note 1, where it is suggested that the employment figure for 1931–8 should be only 94,740, though no explanation is given of how this figure is derived.
10. Glamorgan Record Office (hereafter GRO), Powell Duffryn Collection, Central Committee minute books, 30 Sept. 1930 to 9 Sept. 1931; and *Colliery Guardian*, Vol. 142, p.333 (23 Jan. 1931).
11. GRO, Powell Duffryn Collection, Board minute book of Welsh Associated Collieries Ltd., 23 Feb. 1932; and *Colliery Guardian*, Vol. 144, p.1086 (3 June 1932).
12. *Colliery Guardian*, passim.
13. Mining Industry Act 1926, *Eleventh Report* (P.P. 1938–9, XIII).
14. See, for example, Coal Mines Act 1930, *Reports by the Board of Trade under Section 7 of the Act on the Working of Schemes under Part I of the Act* for 1931 on (P.P. 1930–31, XXV on). For a specific case see the comments of the directors of the Welsh Navigation Steam Coal Co. Ltd. reported in *Colliery Guardian*, Vol. 144, p.764 (15 April 1932).
15. GRO, Powell Duffryn Collection, Central Committee minute books, 1928–35, where discussions with other colliery companies such as the Ocean Coal Company

Ltd., Cambrian Collieries Ltd. and Welsh Associated Collieries Ltd., and coal agents such as Stephenson, Clarke & Associated Companies Ltd., William Cory & Sons Ltd. and Gueret, Llewellyn & Merrett Ltd. are detailed. It is clear that the marketing pressures resulting from the cartel scheme led to close working relationships between the various concerns even before the formal merger of Powell Duffryn with Welsh Associated.

16. Mining Industry Act 1926, *Seventh Report* (P.P. 1934–5, X).
17. N.K. Buxton, 'Entrepreneurial Efficiency in the British Coal Industry Between the Wars', *Economic History Review*, 2nd series, Vol. XXIII (1970) and N.K. Buxton, *The Economic Development of the British Coal Industry* (1978), esp. Ch. 9.
18. W. Johnson, 'Entrepreneurial Efficiency in the British Coal Industry Between the Wars: A Second Comment', *Economic History Review*, 2nd series, Vol. XXV (1972), p.666.
19. GRO, Powell Duffryn Collection, Directors' reports of Powell Duffryn Steam Coal Co. Ltd. and Welsh Associated Collieries Ltd. for 1930.
20. In the anthracite portion of the coalfield Amalgamated Anthracite Collieries Ltd. controlled around 75 per cent of output. A.E.C. Hare, *The Anthracite Coal Industry of the Swansea District* (Cardiff, 1940), p.54.
21. Based on colliery output books and Ministry of Fuel and Power, *South Wales Coalfield: Regional Survey Report* (HMSO, 1946), p.144.
22. Buxton, 'Entrepreneurial Efficiency', pp.488–9.
23. For a more detailed discussion of the interwar merger movement in south Wales and the circumstances behind the Powell Duffryn/Welsh Associated merger see T. Boyns, 'Rationalisation in the Interwar Period: The Case of the South Wales Steam Coal Industry', *Business History*, Vol. XXIX (1987), pp.282–303.
24. Powell Duffryn Ltd., *A Short Survey of the Organisation, Growth and Development of Powell Duffryn* (private circulation, Cardiff, 1946), app. n (2).
25. Ibid., app. n (3).
26. Ibid., pp.14–15.
27. Details of annual reports contained in *Colliery Guardian*, 1925–30.
28. Powell Duffryn Ltd., *Short Survey*, app. n (1).
29. GRO, Powell Duffryn Collection, Main Board minute books for 1928 and Powell Duffryn Ltd., *Short Survey*, p.22.
30. GRO, Powell Duffryn Collection, Board minute book of Welsh Associated Collieries Ltd., 25 Feb. 1930.
31. Powell Duffryn Ltd., *Short Survey*, p.17.
32. See Buxton, 'Entrepreneurial Efficiency', and debate between Buxton, Kirby and Johnson in *Economic History Review*, 2nd series, Vol. XXV (1972), pp.655–73.
33. See, for example, Buxton, *Economic Development*, p.214 where he considers the unification of mining royalties as a prerequisite for meaningful amalgamation along the lines advocated by the Reid Committee.
34. Ministry of Fuel and Power, *Coal Mining: Report of the Technical Advisory Committee*, (P.P. 1944–5, IV), para. 169.
35. This view was expressed at the time by such diverse elements as Political and Economic Planning, *Report on the British Coal Industry* (1936), p.268, *Economist*, 5 Feb. 1938, and H. Wilson, *New Deal for Coal* (1945), p.24.

METAL MINING AND CANADIAN ECONOMIC DEVELOPMENT TO 1939

By ALEXANDER C. DOW

Mining in the popular view in Canada was a staple industry powerfully aiding Canadian development in the twentieth century. Prime Minister R.B. Bennett, visiting Sudbury in the middle of the Depression, praised the mining industry in extravagant terms. He remarked, during celebrations of a half-century of nickel-copper mining in Ontario:

> Sometimes when you feel depressed, as I dare say some of you do, sometimes when you feel everything is wrong in the world, there is nothing I should ask you to think of more than Canada's mining industry if you wish to revive your faith.[1]

In this advice the Prime Minister echoes the faith of his government and the hopes of the Canadian people. For Canadians, mining had become a promise of prosperity, a substitute for the seemingly failed promise of wheat. Society needed economic development, and mining promised to turn the desolate Canadian Shield and craggy Cordillera into molten wealth. Individuals dreamt of 'striking it rich', and admired the toughness and perseverance of the few prospectors who did.

Mine finding, its hardships and occasional rewards, has been well savoured in books of reminiscences and derring-do.[2] These stories of adventure and fortune catch the imagination, and cast a glow over the entire mining industry. The gold rushes to the Cariboo region of British Columbia in the 1860s and to the Klondike at the turn of the century were made possible by the simple technology of placer gold recovery; that is gold taken from water run over sluices which trap the gold particles. Yet for the base metals, and for precious metals after the Klondike rush, mining very quickly became a corporate affair. Nickel, copper, lead, zinc and the other base metals required a complicated and costly technology of extraction and processing, as did platinum, gold and silver trapped in complex ores. Only the corporation, recently invented in America, could deal successfully with the different technological, financial and marketing requirements of twentieth-century mining.[3] The myth of the independent miner survived, but for the actual output of minerals the economy came to depend mainly on just a few major mining corporations. Many of these names are familiar in the financial pages of the nation's newspapers even in the last quarter of the twentieth century: International Nickel (INCO), Consolidated Mining & Smelting (Cominco), Falconbridge Nickel, Hudson Bay Mining & Smelting, Sherritt Gordon, Hollinger Mines, and McIntyre Porcupine.

How then is the expansion of the mining industry to be interpreted?

Here a distinction must be drawn between metal mining and the rest of the mining industry. Metal mining was a staple industry in the traditional sense of an economic activity serving mainly a foreign demand.[4] Also metal mining shared a similar technology of extraction and metallurgy, using the science of chemistry as well as the applied scientific skills of engineering. Together these demand and supply characteristics distinguished the precious and base metals from coal, oil and gas and the structural materials such as building stone and sand. The interpretations offered here are for 'hardrock mining', that is for the base and precious metals, whether these were mined by underground or open pit methods. Of course, where such mining becomes a leading sector of a regional economy, products such as coal and the building materials were given a market, and expanded energetically in tandem with metal mining. These 'linkages' are an important part of the developmental impetus of hardrock mining.

The structure of production of these metals was distinctive. The metal mining industry consisted of firms which engaged in the mining, ore dressing and metallurgical treatment of metallic ores. To the industry were attached by wage contract a regular labour force and by sub-contract a range of employees from professionals in finance to diamond drilling crews and old fashioned prospectors. Seven stages can be distinguished in non-ferrous base metal mining (see Table 1). These stages are exploration, proving, development, production of ores, ore dressing, smelting into matte, and refining into industrial inputs.

Production entails real costs. Each of these stages has a real economic cost to society in terms of the labour and the capital employed and, in later stages, in terms of the exhaustible non-renewable resources removed from nature's storehouse. Wages, profits and rent are the payments required by the firm to obtain these resources. These three sorts of payment take place in institutional settings which differ in formality from the signed wage contract to the vague industry understanding with government to trade taxation for frontier development. Similarly, part of the institutional setting is the expectation of the syndicate, which 'proves' a magnetic anomaly (found by exploration), that their claim will be bought out by a major producer at fair value granted the remaining uncertainties and anticipated production costs. By such payments, based on expectations, regulated by law and by custom, the industry ran. Of course, often there were frictions.

Parallel to the production ladder there existed a financial framework. At one extreme the prospector in the 1920s and 1930s might obtain a 'grubstake' from a few friends and relatives to sustain his summer spent with hammer in hand in the Canadian Shield or mountains of British Columbia. Alternatively he might finance himself by a winter spent trapping furs or working in a sawmill.

Legal transfers of claims and option on claims with different financial arrangements were legion. For example, the Hudson Bay Mining and

TABLE 1

THE STAGES OF 'HARD ROCK' METAL MINING

Stage	*Activity*	*Product*
1	Exploration	Information
2	Proving	Information
3	Development	Site for Production
4	Ore Production	Crushed Ore[a]
5	Ore Dressing	Concentrate[b]
6	Smelting	Matte[c]
7	Refining	Pure Metal[d]

Notes: a. Metal content typically 1 per cent to 4 per cent of combined recoverable metals in this period.

b. Metal content varied considerably around 10 per cent of combined recoverable metals.

c. Matte varied around 95 per cent pure metals. For some fabricating uses this was the industry's final product.

d. Metal content exceeded 99 per cent.

Smelting Company's Flin Flon mine, which was discovered in 1915 by Tom Creighton, a pioneer prospector, changed option holders several times between 1915 and 1925, when a group of New York interests acquired the option and, after metallurgical testing, exercised it and formed the Hudson Bay Mining & Smelting Co. to establish the mine. This was a typical experience in that the road from a prospect to a producing mine was usually both long and contorted. Eventually it was normal for genuinely promising prospects, after successful drilling results, to be taken over by substantial financial interests. The capital needs for developing the ore body and transforming it into a producing mine were so great that the assumption of control by major capitalists became almost inevitable at this stage.

For an article concerned with the impact of metal mining on economic development a semantic, but substantive, matter is what economic development means. Not to labour the point, it may be stated simply that a time dimension exists in the definition of economic development which may be called 'long lasting'. Ideally economic development might be termed economic growth based on a mode of production which, being self-generating, is not liable to regress. Such continuity may be achieved in a modern, industrial economy by real capital formation, otherwise known as 'net investment'. But such investment may either be well suited to economic development in helping to create a flexible economy able to respond to the constant ebb and flow of economic advantage, or such investment may stultify and render inflexible an economy, such that decay ensues, ending the hope of permanence in economic growth. The existence of many ghost towns, and declining mining regions, like the Klondike 'after the cyclone', give illustration to this possibility at the local level.

The Staples Approach

A list of mining events of importance was issued by the Dominion Bureau of Statistics in 1957. The list, compiled by the government's Department of Mines, is of interest not for its content alone, but on account of its very existence. The close relationship between the state and the mining industry is signalled by this document, and so is the attraction the mining industry has had for the popular imaginaton in Canada. (You would search in vain for a similar list in the mother country, Britain.) The history contained in the list is a skeleton not yet clothed. Little historical research has been attempted on Canadian mining from the viewpoint of the business or economic historian.[5] Of course, there are many books and articles dealing with Canadian mining from other perspectives. For instance, geology, and the technical aspects of the mining industry's progress, are relatively well documented. However, despite great popular interest, the economic implications of extractive industry in general, and the economic history of metal mining in particular, have been discussed only rarely with an analytical perspective.[6]

This intellectual void is the more surprising in that Harold Innis, Professor of Political Economy at the University of Toronto, and the doyen of Canadian economic history, wrote in the 1930s on mining and economic development.[7] He analysed the characteristics of mining in terms of the staples approach with which he sought to explain the whole sweep of Canada's economic progress. Yet Harold Innis published only one monograph and two articles dealing directly with mining in Canada, and in those he emphasised mainly the precious metals.[8]

Innis' monograph was published in 1936 as part of the Macmillan series entitled *Canadian Frontiers of Settlement*, the general editors of which were W.A. Mackintosh and W.L.G. Joeng. In his brief forward to *Settlement and the Forest and Mining Frontier* (a study on the Forest Frontier by A.R.M. Lower was bound in the same volume) Mackintosh identifies the unique economic problem of extractive industry. In discussing settlement associated with forestry and mining Mackintosh observes as follows:

> Such settlement is likely to be temporary and leave in its wake those serious social and economic problems associated with shrinking incomes, declining population and abandoned homes, unless during the period of exploitation there have been built up subsidiary industries, capable ultimately of independent existence. The exploiting industries build up subsidiary developments not only in their immediate neighbourhood but also throughout the whole country.[9]

Innis was somewhat ambiguous in his monograph. At one point in his discussion of the Klondike gold rush he writes that:

> The geographical limitations of the Yukon from the standpoint of subsidiary and diversified development and the general character of that development brought out sharply the essential characteristics of placer mining and of the mining industry generally in pioneer communities, namely, the terrific drive towards the development of industrial growth.[10]

This was Innis' basic attitude to base as well as precious metal mining. It emerges most strongly in his conclusion to *Settlement and the Mining Frontier* and, significant in revealing his essential views, in that published work in which he refers in passing to the economic effects of mining. But, again in the monograph, the necessary qualification appears in discussing the Yukon:

> There remains a vast shell of equipment in terms of buildings, transport facilities, and mining equipment. Empty houses in Dawson, engines formerly on the Klondike Mines Railway and now locked in the roundhouse, abandoned saw mills – these are indications that the economic cyclone has spent its force. The problems of the Yukon are the problems of all mining camps but focused in a clearer light.[11]

In his ensuing examination of the effects of base metal mining in the Kootenay area of British Columbia in the 1890s, Innis' position becomes clear. Mining was deemed responsible for the geographical spread of the transportation system. Population was attracted by the industry's labour demands increasing the scope for agricultural production along the transportaton links. Eventually a locally specialised agriculture, including the fruit farming of eastern British Columbia, expanded from serving a local market to exporting via the rail network. Goods demanded by the mines were shipped in by a railway eager for traffic to spread the vast overhead costs of construction. After mine exhaustion new extractive resources were developed by the mining and smelting organisations which took over from the earlier, entrepreneurial miners.

A critical observation is in order here. A question to which Innis gave no clear answer in this work despite the interpretive nature of his account, was why mining would *sometimes* bequeath a viable continuing industrial and agricultural base and, *on other occasions*, leave only the shell of exhausted workings and a derelict ghost town. The stimulus of spreading heavy overhead costs was credited with spurring entrepreneurial initiatives without pause to consider the failure of the same incentive in apparently similar circumstances.[12]

Yet Harold Innis' staples approach to mining is seminal. He focused attention on the major factors bearing upon the developing of mining in Canada. He viewed transportation as a prerequisite to economic development; and mining provided the financial returns to pay, at least in part, for the heavy fixed costs of the rail links which were the major means of transportation. He had a geographer's conception of power sources as a magnet for industrial activities. Mining demands for hydro-electric power again acted as a prime motive for the construction of expensive infrastructure. The demand for labour attracted a population which was molasses-like in its adherence to the subsidiary economic activities of an area after the initial source of employment disappeared. The population did not merely 'take in its own washing' but created inward rail traffic in food and manufactures from along the lines. Mining itself generated a year-round outward traffic in concentrates or smelter matte (useful in contrast to wheat's seasonality) and provided a steady demand for industrial inputs such as explosives and chemicals produced in the Canadian urban centres. The perceived need to encourage mining involved government in the financing and subsidising of railway construction which would otherwise never have come into existence.[13]

Two factors, however, received scant attention. The US presence in Canadian base metal mining was merely acknowledged, and the extent to which the industry had become capital-intensive noted, but not pursued in its implications for reduced population attraction and increased specialised imports from abroad. Since the Innis of the 1920s and 1930s had not yet become fully aware of the US influence on Canada, and since the trend towards ever greater capital intensity was only then beginning, his omission is understandable. Unfortunately these two neglected factors were very important in the subsequent growth of metal mining in Canada and in its effect on the Canadian economy and society.

Economic Development

Mining in Canada has been perceived as a prime source of economic development in the twentieth century. Yet Canada failed to achieve industrial diversification around a mining base. Thus, despite the wonderful vibrancy of the private mining industry, and despite great entrepreneurial flair, the overall effect of the industry's growth on the Canadian economy may have been less then its potential warranted.

This insight can be better understood with the help of two economic concepts, linkages and economic rent. Linkages analysis served to render some of the perspectives of the staples approach more precise. One of the theoretical advances of development economics, the linkages technique, is one of a family ranging from Myrdal's spread/backwash effects at the qualitative level to Leontief's input/output methods at the quantitative level. The unifying characteristics of this set of techniques is that they are concerned with the impact of activities in one part of an economy on other parts of the economy. The concept of linkages is sufficiently precise to allow an assessment of developmental impact while not requiring unavailable data.[14] (The originator of this line of interpretation of the staples approach is Professor M.H.

Watkins of the University of Toronto.) Economic rent involves the identification of a sort of economic surplus. Ricardian economic rent, as used this article, appears in the long run. The sum of the Ricardian economic rents attaching to a particular extractive resource over time is viewed as a valuation of that resource's worth to the economy.[15]

The above assertion may now be restated. Private enterprise, unsupervised by the state, failed to realise some linkages warranted by the richness of Canadian ore bodies and, by leaving Ricardian economic rent in private hands, allowed much of the economic surplus created to be used inefficiently within the mining industry or to escape the Canadian economy. In short Canadian economic development based on extractive industry, to the extent that metals are typical, was impeded by a view of property rights and a pattern of ownership inimical to the full achievement of the economy's development potential.

The elaboration of linkages as distinct theoretical constructs was first undertaken by Albert Hirschman, whose *Strategy of Economic Development*, published in 1958, defined forward linkage effects and backward linkage effects. His purpose was to search for development mechanisms 'that trend to maximise induced investment decisions'.

Backward linkages exist in industries whose input requirements increase significantly with output. Satisfying such derived demand internally leads to induced economic growth. Input requirements are visualised as both materials and services; and their provision may be discrete, in the shape of costly fixed capital goods, or continuous, in the form of raw materials, energy or other supplies which vary with output levels. Into the former category falls machine tools industry and infrastructure industries such as transportation and power supply. Often the latter category will include a number of satellite industries whose principal output is a minor input of the master industry. Motel accommodation in an isolated mining township is an example of such a dependent relationship. As with other linkage concepts a backward linkage is both a stimulus and an opportunity. A demand is created in the satisfaction of which a profit seems likely to be made, or a level of use is projected sufficiently to justify the state's support for the provision of social infrastructure. The concept has the great merit of focusing directly on the behavioural mechanism by which economic growth and development occurs in a mixed, capitalist economy.

Forward linkages are defined for industries the output of which does not all go directly to satisfy final demands. It is suggested that the availability of raw materials and of intermediate goods (such as blister copper or copper wiring) will induce attempts to make use of the product in some manner. This might happen because of a transport cost advantage, especially if further processing involved substantial weight or volume reductions. To encourage such development is a major purpose of protective tariffs.

Following Hirshman's terminology, subsequent writers have identified final demand linkages as an additional phenomenon.[16] The concept focuses on the extra purchasing power created by payments to an industry's factors of production, or, to be more precise, to their owners. Labour in particular obtains from employment the ability to purchase final goods and services which will have an important linkage effect spreading throughout the entire economy. The retail trade in town and city is obviously highly dependent on such linkages. In the short run with unused resources available to expand output the final demand linkage amounts to the familiar income multiplier of macroeconomic theory. But from the point of view of economic development it is the long run which is important.[17] Only in the absence of substantial unused capacity will new investment likely be encouraged in consumer goods industries and distribution networks. Thus the potential identified by the final demand linkage concept is different to that of the income multiplier.

A broadening of the economic base of a nation may occur by means of entrepreneurs embarking on linkage-induced investment. Banks, the media, fuel suppliers, retail stores and service centres are but some of the business forms attracted to a thriving economic centre. More far-flung effects influence transportation provision, the planning of utilities and the workload of government bureaucracies. Manufactures find a market in the demand of the labour force created by a new or expanded mining or smelting operation. The form of the institutional reaction is determined by forces beyond the simple linkages framework, and the danger of grafting linkages on to the staples exploration is that the latter may be reduced to a mechanistic growth model. In such a staples growth model emphasis may rest to an excessive extent on the demand side of the exploration, and on the way in which the characteristics of the staple determine the linkages involved. Such effects are of importance, but in using the staples approach it is also essential to appreciate the importance of production, and of entrepreneurship which does not passively accept easily obtained orders, but rather strives energetically to make sales, and transforms the production process by means of technological innovation.

The annual Special Edition of the *Northern Miner* in August 1927 was a paean of praise to the booming Canadian mining industry.[18] An article described the Toronto Standard Stock and Mining Exchange as the 'best market in North America for mining securities'. Another asked plaintively 'why does Great Britain stand aloof' – ignoring the investment potential in the mining share bonanza. In one interesting piece, more analytical than the rest, a writer enquired rhetorically 'does Toronto realise its debt to the north?' Acknowledging first that Toronto possessed a good market for mining stocks, the existence of many Toronto fortunes based on mining was noted. According to the writer 90 per cent of Ontario mines had Toronto head offices. The article continued to detail in non-technical terms the linkages through which Toronto benefited from the mining industry. Toronto, it declared, obtain the bulk of the business of equipping the mining crews with food, tools, clothing and other necessary items. S.H. Logan, the general manager of the Canadian Imperial Bank of Commerce, was quoted as follows:

> In 20 years about one billion dollars has come out of Northern Ontario. About $600,000,000 must have been spent on supplies, wages, food and machinery in Toronto and Southern Ontario.[19]

In a speech to the Toronto Board of Trade Club precision is not to be expected, but the quotation illustrates vividly that the Canadian trader and entrepreneur was by no means unaware of the commercial potential of the mining industry. The backward linkages of hinterland mining to the Toronto metropolis were clear in 1927.

Agriculture, forestry and mining were the foundation stones of Toronto's prosperity in the 1920s. Wholesalers and small manufacturers, as well as the Eaton mail order business, flourished on the basis of these primary demands. Mining and Toronto were the more closely connected because Ontario was now the main mining province, and some Toronto jealousy was aroused by the holding in Montreal in 1928 of the Imperial Mining Congress. A contest between Ontario and Quebec to induce the rail link from Noranda to run to their respective metropolitan centres, Toronto and Montreal, showed once again that the linkage benefits of mining expenditures were clearly understood by the commercial classes in the two provinces. Later, when the grim 1930s succeeded the buoyant 1920s, gold mining in Northern Ontario and Quebec remained a bright glow in an otherwise bleak economic landscape. Base metals, though production faltered, did not collapse in the manner of the wheat economy. Recovery too was faster than with the agricultural staple. In short, base metal mining in the inter-war period in Canada was a significant source of domestic demand. In the production of minerals, costs were incurred for goods and services, the supplying of which acted as a stimulus to Toronto and Montreal. These cities obviously benefited from some of the backward linkages from mining.

The *Sudbury Star*, the newspaper serving the mining communities of Sudbury and Copper Cliff, must itself be considered a final demand linkage of the copper-nickel mines. In the Feature Edition celebrating in 1933 the half-centenary of nickel in Sudbury, 60 pages were printed, including about one-third of advertising materials.[20] These pages serve as a window on the economic connections of the industry and of INCO in particular, at that time. In what can only be a rough, intuitive analysis, this material is presented in Table 2. An examination will show that backward linkages predominate among the important advertisers in this special edition. If security dealers are admitted as a backward linkage of the industry, the preponderance of backward linked businesses would be still greater. To include the smaller advertisers would indicate a significant role for the construction

TABLE 2
THE FEATURE EDITION OF THE *SUDBURY STAR*

Advertiser[a]	*Products*[b]	*Linkage Type*[c]
Canadian General Electric	Generators, Transformers, Motors,Switchboards	B
Imperial Oil	Petrol, Paraffin	B
Royal Trust Co.	–	FD, B
Canadian Westinghouse	Electrical Apparatus	B
Cochrane-Dunlop Hardware, Sudbury	–	FD
Canadian Atlas Steels, Welland	Hollow Steel Drill	B
Ontario Hydro Power Commission	–	B
Canadian Loco. Co., Kingston	–	F, B
Northern Electric Co.	Electric Switches, Wires and Cables	B
Geo. Gordon and Co., Cache Bay (Ontario)	Lumber	B
Sudbury Brewing and Malting	–	FD
Foley Bros., New York	Construction	B
Canadian Foundries and Forgings	Crusher Balls, Mill Liners, Forged Shafts	B
Canadian Industries Ltd (CIL)	Explosives, Paint etc	B
General Engineering Co. Toronto	Flotation Machines	B
The Bank of Toronto	–	FD
Canadian Airways	–	B
STELCO	Steel and its products	F, B
Herber Morros Crane and Hoist	–	B
T. Eaton and Co.	–	FD

Notes: a. Full page and half page advertisements only. Security dealers excluded.
b. Selected.
c. F = Forward, B = Backward and FD = Final Demand.

Source: Sudbury Star, Feature Edition (August, 1933).

industry indigenous to Ontario, again, a backward linkage. A few forward linkages to machine manufacturers in Canada (other than mining machines) are also indicated among the smaller advertisers. To the extent that contemporary advertising in this medium sheds light on the industry's economic contacts, backward linkages are seen to dominate.

Most mines were small mines, though the leading companies based on large mines dominated the industry.[21] There were 485 operating metal mines in Canada in 1929 with just over 31,600 employees. The leading mining province, Ontario, had only 97 metal mines in that year but almost 16,000 employees in metal mining. Canada had 867 metal mines by 1936 employing 46,500 in all.

What were the backward linkages to the *development* of a small mine in Northern Ontario? Though not indicative of day-to-day operating linkages, examination of such an experience can be considered an analysis of some of the 'typical' backward linkages of the industry. Relevant information is obtainable from an article entitled 'The Cost of

TABLE 3

DEVELOPMENT COSTS FOR A SMALL MINE IN THE 1930S

Activity	*Cost*[c]
Preliminary Development	
Prospecting[a]	2,000
Recording and Patents	976
Surveying and Legal Costs	2,540
Temporary Buildings	1,311
Stripping and Blasting	1,360
Sampling and Assaying	274
Diamond Drilling	12,700
Building	13,505
Plant and Equipment	42,070
Road Building	5,000
General Charges[b]	13,500
Sub Total	95,136
Underground Development	
Shaft Sinking	37,200
Other Development	51,800
General Charges[b]	24,000
Sub Total	113,000
Overall Total	208,136

Notes: a. This cost is an arbitrary estimate.
b. Managerial salaries, advertising, insurance, etc.
c. All values in Canadian dollars.

Source: M.D. Isbister, 'Cost of Developing a Small Mine', *Canadian Mining Journal*, Vol. 60, No. 5, (May 1939).

Developing a Small Mine', which appeared in the *Canadian Mining Journal* in 1939.[22] The article assumes a hypothetical underground mine in Northern Ontario with a 525 feet deep shaft developed at 125 feet intervals to a total of 3,000 feet. Electric power was assumed to be available, and only five miles distant there passed a railroad. The ore warranted the erection of a small concentrator while development work was in progress. The costs of development up to the point of regular production are laid out in Table 3. In all, the development was presumed to take 21 months. The underground development was judged to be completed in 12 months from the commencement of shaft sinking.

The underground development, unlike the preliminary work, would involve a minimum of sub-contracting. (Diamond drilling was always handled by independent contractors for the smaller mining companies.) Labour costs therefore represented the actual labour costs involved in the work underground. These labour costs were deemed by far the most significant expense of underground development accounting for about $4,500 a month whereas 'supplies', for example, were costed at

$1,500 a month and electric power at $700 a month. Obviously the labour cost was the most significant element of cost to the mine, but the single commodity, electric power, can also be seen to be vital. Cheap electric power, as provided by hydro-electricity, did lower the costs of small mines in the province's northland in a significant way. Hydro-electricity provision eventually, by the province in Ontario, emerged as an important backward linkage of mine development.

Particular items purchased by the $200,000 of development expenditures would have included an electric hoist ($9,200), a compressor ($7,000), a heating plant boiler ($1,200), underground rock drills ($3,350), 2 shaft cages and 2 buckets ($1,600), electric transformers ($5,000), three-quarters of a mile of electric power line ($1,000), five miles of road ($5,000) and several buildings ($3,500). These were all potential backward linkages to the Canadian economy, from which, if the advertisers in the *Sudbury Star* give any guide, many Canadian based companies benefitted in the 1930s.

Besides non-ferrous smelting and refining, what were the forward linked industries associated with base metal mining? In Canada, prime among these was the electrical apparatus and supply industry. Almost one half the wages and salaries in the sector called 'non-ferrous metal products' were paid to the constituent electrical apparatus and supplies industry in 1928.[23] In 1928 40 per cent of the cost of materials used in the non-ferrous metal products sector was incurred on account of this electrical goods industry. Electric storage batteries, radio equipment, telegraph and telephone apparatus, electric motors, spark plugs and kitchen stores were the main products fabricated from metal products.

It is interesting to note the small proportion of the exports of this industry going to the USA.[24] Less than 1 per cent of export sales in 1936 were to the USA. Major customers were the United Kingdom, the British Empire and South America. Typical purchases were $15,000 of ignition equipment by Australia, $182,000 of electric kitchen stoves by South Africa, $151,000 of telephone and telegraph apparatus by Brazil, $43,000 of the same equiment by Argentina and $122,000 of batteries by New Zealand. Despite the geographic proximity of the USA, it seems Canadian manufacturers of electrical goods found their markets elsewhere. Indeed, some were subsidiaries of US firms.

Of course, other industries used the output of non-ferrous base metal mining. Brass and copper products along with lead, tin and zinc products required $19.8 million of materials in 1928, which was exactly one-fifth of the materials purchased by the non-ferrous metal manufacturing sector. Such expenditure represents not only purchases of base metal refinery products but also spending on general supplies. Thus, forward linkages spiral up creating demands throughout the economy.

Looked at as a whole, the (non-ferrous) metal manufacturing industry, including smelting and refining, was rather modest in scale in 1928 as compared with, for example, the iron and steel industry, despite the absence of significant iron ore mining at this time in Canada.[25] Also the gross values of production of textiles, wood and paper products, and animal and vegetable products were mostly greater by a factor of two or three than the output of metal manufacturing. Minus smelting and refining the products grouped under 'Non-Ferrous Metal Manufactures' were equal in value to the output of the small chemicals industry. Despite the mineral richness of Sudbury, Trail and the lesser base metal communities, there had not been experienced by 1928 a major development of manufacturing based on minerals from the mill, smelter or refinery.

Thus obvious forward linkages to base metal mining seem to have been modest in the 1920s and 1930s. There must also have been less perceptible forward links – to stainless steel, scientific equipment and so on. It would be wrong to underestimate the role played by a ready supply of nickel, copper, lead and zinc in easing the task of Canadian entrepreneurs in many industries. However, imports of non-ferrous base metals remained significant in the 1920s reflecting the shortage of Canadian refining capacity for copper and zinc and the inability of the refiner to provide the whole range of products required by fabricators.[26]

Despite their importance, rather little can be said by way of precise analysis of the mining industry's final demand linkages. In general the extent of these linkages is witnessed by the frontier penetration of mining civilisation with its social infrastructure, townsite construction and retailing services. The owners of labour services raise families and provide for them with the rewards of their labour. The diverse demands of a community are what is described as final demand linkages.

Already it has been suggested that the bill for wages and salaries was often a substantial part of mining costs in the 1920s and 1930s. By way of illustration in the nickel-copper part of mining in 1921, a labour force of 816 wage earners and 39 salaried employees were paid for some part of the year at least. Demand conditions for the industry's products were very slack. Payments to labour in the mines and mills amounted to $734,000 out of total expenditures for the year in the nickel-copper mining and milling industry of $1.4 million.[27]

On the metallurgical side of the business, there are the processes of smelting and refining nickel-copper matte. Labour, both salaried and non-salaried, earned $1.2 million in smelting these ores in 1921 and $551,000 in refining them. In comparison, fuel purchases, mostly imported coal products, by the same smelters and refineries, were worth only $925,000 in that year. Expenditures on labour, it may be noted, were much greater than monies spent on electricity and fuel, the other most important backward linkage. To put this in perspective over the longer period, data show that roughly one-third of the gross value of production of all the Canadian metallic industries, precious and base, was earned by the labour force from 1923 to 1939. Throughout the period, metallurgy incurred proportionately less of its total cost as labour cost than did mining and milling.

In assessment, it can be said that, as the mining industry grew, an important part of its contribution to Canadian economic development arose through its employment of labour. Immigration, too, with its pervasive developmental effects was encouraged by a large increase in the labour force over the period. A mining labour force appeared with specialist skills.

What of economic rent, the second source of developmental impetus in a mining-based economy? The taxation policies of the Canadian state were not designed to collect such rent until the 1970s. For example, the International Nickel Co. of Canada had declared dividends over its lifetime to 1952 of $693.8 million, based on the exploitation of the Sudbury nickel-copper ores in Ontario. Yet the province of Ontario collected under the Mining Tax Acts only $29.5 million from the company over the same period.[28] Dominion taxes on money were also light.[29]

So economic rent stayed mainly in private hands where, on occasion, it could be instrumental in financing further mining expansion. For instance, after the successful exploitation of the Cobalt Silver mining area in Northern Ontario later expansion at Porcupine, Kirkland Lake and Noranda (over the border into Quebec) was partially financed by pools of capital from the Cobalt mines. Yet much economic rent must have left the Canadian economy as dividends to foreign shareholders in Canadian companies, foreign ownership of Canadian mining companies being commonplace throughout the history of the industry.

Conclusion

Harold Innis compared the Klondike experience to a cyclone in its economic effects. The gold created a furious draught of demand which blew itself out with mine exhaustion, leaving the local infrastructure as a shell without a purpose. The ghost town is a hovering question mark over the developmental effects of mining's final demand linkages. Fortunately for Canada, the diversity of minerals, often in long-lasting ore bodies, has mitigated this probem. At least Sudbury and Trail have stood for 50 years and more, though many communities, like Sheridon in Manitoba, have withered away with the disappearance of commercial ore.

The transitory nature of final demand linkages from particular extractive resources has always been, and remains, a fundamental problem in evaluating the developmental impact of Canadian mining. What social costs lie hidden in the derelict buildings and deserted roadways of the Canadian ghost town? It has been indicated that backward linkages predominated, along with final demand linkages, in the industry's expansion. Yet economic development in the sense of a permanent, rounded economy is not well served by this pattern of linkages. It is from the establishment of an independent, manufacturing economy utilising the raw materials of smelter and refinery that more lasting benefits to Canadian economic development from mining might have come.

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NOTES

1. *Sudbury Star*, Feature Edition (Aug. 1933).
2. See, for example, F.J. Smyth, *Tales of the Kootnays* (Vancouver, 1977); D.M. Le Bourdais, *Metals and Man: The Story of Canadian Mining* (Toronto, 1957); P. Smith, *Harvest from the Rock: A History of Mining in Ontario* (Toronto, 1986).
3. See A.C. Dow, 'Finance and Foreign Control in Canadian Base Metal Mining, 1918–55', *Economic History Review*, 2nd series, Vol. XXXVII, No. 1 (Feb. 1984).
4. M.H. Watkins, 'A Staple Theory of Economic Growth', *Canadian Journal of Economics and Political Science*, Vol. XXIX, No. 2 (May, 1963); M.H. Watkins, 'The Staple Theory Revisited', *Journal of Canadian Studies*, Vol. 12, No. 5 (Winter, 1977).
5. Recently the omission has been addressed by a few authors. See, for instance, D. Newell, *Technology on the Frontier: Mining in Old Ontario* (Vancouver, 1986); P. George, 'Ontario Mining Industry, 1870–1940', in I.M. Drummond (ed.), *Progress without Planning* (Toronto, 1988).
6. See the references in W.G. Richardson, *A Survey of Canadian Mining History* (Canadian Institute of Mining and Metallurgy, Special Volume 14, 1974).
7. A biography is D. Creighton, *Harold Innis: Portrait of a Scholar* (Toronto: University of Toronto Press, 1957).
8. H.A. Innis, *Settlement and the Mining Frontier* (Toronto, 1936); idem, 'The Canadian Mining Industry', in H.A. Innis (ed.), *Essays in Canadian Economic History* (Toronto, 1956); H.A. Innis, 'Mining', in *Encyclopaedia of Canada*, Vol. III (1936).
9. W.A. Mackintosh, 'Foreword' in H.A. Innis, *Settlement and the Mining Frontier* (Toronto, 1936).
10. H.A. Innis, *Settlement and the Mining Frontier*, p.261.
11. Ibid., p.267.
12. See, for the role of entrepreneurship, A.C. Dow, 'Prometheus in Canada: The Expansion of Metal Mining, 1900–50' in D. Cameron (ed.), *Explorations in Canadian Economic History* (Ottawa, 1985).
13. A textbook with a staples approach, much used in Canadian economic history classes in the 1960s and 1970s, and which considers mining, is W.T. Easterbrook and H.G. Aitken, *Canadian Economic History* (Toronto, 1956).
14. See A.O. Hirschman, *The Strategy of Economic Development* (New Haven, 1958); A.O. Hirschman, 'Linkages', in J. Eatwell *et al.* (eds.), *The New Palgrave: A Dictionary of Economics* (1987).
15. A.C. Dow, 'Economic Rent and Canadian Extractive Resources, 1900–70', *Bulletin of Canadian Studies*, Vol. IX, No. 1 (Spring, 1985).
16. See Watkins, 'Staple Theory of Economic Growth'.
17. A good discussion of such questions is S. Kuznets, 'The Meaning and Measurement of Economic Growth', in B. Supple (ed.), *The Experience of Economic Growth* (New York, 1963).
18. *Northern Miner*, Aug. 25 1927.
19. Ibid.
20. *Sudbury Star*, Feature Edition (Aug. 1933).
21. The data in this paragraph come from Dominion Bureau of Statistics (Ottawa), *Annual Review of the Mineral Production of Canada* (1929), Table 27; *Annual*

Review of the Mineral Production of Canada (1936), Table 20.

22. M.D. Isbister, 'Cost of Developng a Small Mine', *Canadian Mining Journal*, Vol. 60, No. 5 (May 1939).
23. Unless otherwise noted, the data in the immediately succeeding paragraph come from Dominion Bureau of Statistics, *Manufactures of Canada: Production, Imports and Exports* (prepared for use by the Imperial Conference, 1930), Table V.
24. Dominion Bureau of Statistics (Ottawa), *Trade of Canada* (1936), Table II.
25. On iron and steel production see K. Inwood, 'The Iron and Steel Industry', in Drummond (ed.), *Progress without Planning*.
26. M.C. Urquhart and K.A.H. Buckley, *Historical Statistics of Canada* (Toronto, 1965), Series N27–49.
27. Dominion Bureau of Statistics (Ottawa), *Annual Report of the Mineral Production of Canada* (1921), p.51.
28. *Financial Post, Survey of Mines* (1954); and Ontario Department of Mines, *Annual Report*, various year.
29. A.C. Dow, 'Economic Rent and Canadian Extractive Resources, 1900–70'.

REVIEW ARTICLE

A NEW VIEW OF CANADIAN BUSINESS HISTORY

DUNCAN MCDOWALL, *The Light: Brazilian Traction, Light and Power Company Limited, 1899–1945* (University of Toronto Press, 1988. Pp.459. £28.00).

CHRISTOPHER ARMSTRONG and H.V. NELLES, *Southern Exposure: Canadian Promoters in Latin America and the Caribbean, 1896–1930* (University of Toronto Press, 1988. Pp.375. £24.50).

More than merely reflecting the fact that business is now a subject of vigorous scholarly study in Canada, these two recent books announced the emergence of a new school of business history. A small but influential band of Canadian business historians have in the past few years blazed a trail which not only deviates from the method and content of previous Canadian business history but diverges in some important respects from the dominant approaches used in Britain and the United States.[1] Until recently, Canadian business history concentrated on the dominant individuals 'directing' certain business enterprises rather than on the organisations themselves, dwelling on their contributions as entrepreneurs or their moral depravity as robber barons. The only existing historical surveys of Canadian business are written by the leading exponents of this approach.[2] These works contain the kind of caricatures of business once prevalent in the British and American literature: 'an heroic mythology on the one hand and kind of economic crime club on the other'. Moreover, they reflect an extreme version of the antagonism between the two themes of continentalism and nationalism. Continentalists assume there is no conflict between North American economic integration and Canadian political sovereignty; moreover, they tend to treat Canadian business as a northern and rather marginal offshoot of the real American variety. Nationalists are fearful of the political implications of American ownership of industry in Canada even as they pontificate on the lazy and treacherous nature of Canada's indigenous capitalists – a class accused of preferring the safer profits of finance and merchanting to the risks of industry.[3]

Since both views play down the significance of Canadian industry and its structure, we learn very little about the reasons for successes or failures of Canadian multinational enterprises in comparative international terms. In a nation where foreign companies, predominantly American in origin, have largely directed the pace and direction of industrial development in the twentieth century, it has been all too easy to ignore the existence, much less the power, of multinationals with Canadian parentage. Such an unbalanced and historically inaccurate view is firmly rejected in *Southern Exposure* and *The Light*. Both books emphasize the vigour of Canada's own business class by showing Canadians doing to others what they once accused Americans of doing to them. Moving through Latin America and the Caribbean, Canadian entrepreneurs promoted, financed and managed industrial investments. Forging links with local business and political élites, these Canadian companies exercised considerable power in the 'developing' nations of the region – a situation which resembles the historical relationship between American business and the Canadian élite.

Concentrating on the most successful area of Canadian foreign direct investment, the authors present evidence, based on extensive archival research, which describes the early triumphs of Canadian utility operations like Mexican Light & Power, Brazilian Traction, Trinidad Electric, Demerara Electric, and Jamaica Electric Light. In addition, they reveal the organisational weaknesses of the Canadian enterprises. In particular, according to Armstrong and Nelles, the Canadian operations lacked the integration that the American and European utility companies enjoyed from their birth. In effect, the Canadian utility operations were closer in character to Mira Wilkins' free-standing companies than Alfred Chandler's modern business enterprise.[4] They did not grow out of the domestic operations of Canadian companies, but were set up specifically to establish a foreign operation. The real head offices of the Canadian utility companies were the operational headquarters in Latin America and the Caribbean, rather than the legal-financial offices in Canada.

Conversely, the American and European utility multinationals were responses to genuine technological and organisational needs. General Electric's utility holding company, EBASCO (Electric Bond and Share Co.), for example, grew out of an electrical equipment manufacturing company, and therefore started life with a centralised, multidivisional organisational structure. The giant Canadian utility companies such as International Power and Brazilian Traction were originally established as promotions to sell securities having no organic connection to the electrical engineering industry. From the beginning, the Canadian companies relied on German and American manufacturers for the electrical equipment they needed to construct and maintain their thermal and hydroelectric systems. While Canadian lawyers and financiers ostensibly directed the operations of these companies, American engineers were mainly responsible for designing and running them. The Canadians were in the vanguard of establishing foreign utility multinationals, but after the Great War enterprises such as EBASCO as well as the Belgian and Swiss utility holding companies that were connected to German manufacturers began to dominate the industry.[5]

McDowall, Armstrong and Nelles perceive the relationship between enterprise and the state as central to the strategy and structure of business: a theme common to much of the new Canadian business history. We see how the desire of the newly industrialising state to shape economic development according to its own needs produces opportunities for business as well as limitations. Armstrong and Nelles stress the profitable advantages taken by foreign enterprises, at least in the initial stage, because of superior technology and privileged access to large sources of capital. Admittedly, this advantage could be very short-lived, as was illustrated by the fate of the Mexican Light & Power Co. following the Mexican Revolution. McDowell tends to emphasise the limitations which the state, in this case Brazil, placed on the actions and long-term strategy of business. This focus on national élites, shifting political alliances, and state-directed industrial strategies contrasts sharply with the dominant business history methodology in Britain and the United States, which rarely treats the state as a significant element.[6]

In one sense, however, the new Canadian business historians are drawing upon an ancient tradition in Canadian economics and historiography, which considers the evolution of individual businesses and their relationship with the state to be the critical components of economic development. Because of the obvious importance of a few very large trading and transportation companies during the early stage of Canadian development, it was once thought possible to explain the economic history (if not the entire social development) of Canada by reconstructing the activities of the Hudson's Bay Co. and the Canadian Pacific Railway.[7] Sponsored and protected by the state, these enterprises accepted certain 'national' responsibilities in an environment where most business decisions contained an important political dimension. In this sense, Canadian business history is traditionally much closer to the scholarship produced in those nations, such as Germany and Japan, where the state has played a more central role in economic development.[8] The approach of the new school of Canadian business historians only serves to reinforce this tendency.

A truly unique aspect of the work of the new group is the way in which they integrate organisational and technological developments with changes in corporate finance. Although a number of business historians have documented the history of financial institutions in Britain and the United States, few have analysed how the need for finance and the manner in which it is provided can shape the strategy and structure of industrial enterprises. The new school of Canadian business history puts finance centre stage. *Southern Exposure* and *The Light* both contain extensive analyses of the evolution of international corporate finance as well as the strategies employed by enterprises in response to capital needs. Eschewing the unidirectional and technologically deterministic Chandlerian model, McDowall, Armstrong and Nelles demonstrate how technological imperatives and organisational needs determine, and are determined by, such financial requirements. The authors reveal the enigmatic connections between stock market manipulation and physical capital formation during the height of the unregulated gilded age when paper fictions are miraculously transformed into hydro-electric dams, streetcars and telephones.

'The Light' was the name coined by Brazilians for the holding company which owned the street railway and lighting systems in the cities and suburbs of Sao Paulo and Rio de Janeiro, the major hydroelectric power plants and the country's largest telephone system. Detractors called it the Canadian octopus because it seemed to control so many of Brazil's essential services. Under constant threat of nationalisation after 1930, the Light's management devoted almost as much effort to fending off expropriation as to delivering electric power, street lighting and tramway services. By 1946, the Light represented the largest Canadian foreign direct investment in the world. With assets of nearly half a billion dollars, it supplied 60 per cent of Brazil's power and 75 per cent of its telephones. McDowall traces the evolution of the Light from an overcapitalised vehicle for promoters' profits to one of the world's most substantial producers of electricity. Along the way, we are treated to a panoply of unorthodox engineers solving seemingly insurmountable difficulties, wily corporate lawyers navigating the company through the turbulence of Brazilian politics, and unforgettable financiers – among them Alfred Loewenstein, the 'Belgian Croesus', who mysteriously 'fell' out of an airplane over the English Channel after an attempted takeover of Brazilian Traction. More important, we learn about the corporate strategies responsible for the Light's survival in the face of exchange rate crises, armed insurrections and demands for expropriation and repatriation of profits. Although McDowall's exhaustive description and analysis of the Light's activities ends in 1945, his epilogue brings the story up to date, providing us with some idea of the dynamics of a multinational operating in a large and rapidly industrialising 'developing' nation after the Second World War.

Most of the more important information concerning the history of the Light is duplicated in *Southern Exposure*. This is not terribly surprising, given that McDowall generously shared his research so that Armstrong and Nelles could do their comprehensive survey of the foreign-based Canadian utility companies. The financial and managerial activities of these enterprises are traced from the day they were a mere glint in the eye of a promoter to their relative decline as a consequence of the rise of the integrated American and European concerns. In a highly readable and illuminating introductory chapter, Armstrong and Nelles describe the autarkic state of Canadian finance immediately before the turn of the century. Within a decade, and following on the heels of unprecedented domestic industrial growth, a new breed of financiers emerged with new techniques of high-risk financing borrowed from utility and industrial merger promoters in the United States. They supplied the demand for corporate finance that the conservative and inbred Canadian banking system was unable or unwilling to meet. Where demand did not yet exist, they created it by establishing their own corporations to supply their need for new flotations. Young men such as Max Aitken (Lord Beaverbrook) of the Royal Securities Corporation, E.R. Wood of the Dominion Securities Corporation and (Sir) James Dunn pushed beyond the frontiers of the small Canadian investment community and began to exploit the money markets of London, Paris, Brussels, Berlin and New York.

Most of the money generated went into foreign utility operations. Canadians had developed some expertise in this industry through the rapid urban and industrial transformation in the great boom years after 1896. Once profitable opportunities were saturated north of the Rio Grande, they went south in search of new investment possibilities. Canadians specialised in this form of investment to such an extent that, in the first decade of the twentieth century, they had more money invested in foreign utility adventures than in their own domestic operations. Concessionary agreements negotiated by a coterie of lawyer-promoters protected profits and excluded competitors. Aside from revolution, which could and did occur, and the problems of currency convertibility which affected the purchase price of North American and European equipment as well as the outflow of dividends and bond interest, the profitability of such operations was remarkable.

While the Canadian view of these enterprises from Canada was generally rosy, that of the host country quite often was not. Both books briefly address the impact of such foreign investments on developing countries. Although sympathetic to the critical nationalist view, Armstrong and Nelles refuse to adopt a simple dependency theory. While recognising the negative aspects of foreign investment, particularly in the unregulated environment before the Great War, they also admit some of its benefits. Moreover, the relationship between capital and nationality is revealed as more complex than traditional dependency theory would lead us to believe and, for that matter, as more significant than is assumed in the orthodox view which ignores or minimises this relationship.[9] The Canadian companies attempted to use not only their own state, but also the British and American governments, to protect what they perceived as their property rights. At times, they were successful, but often they relied on their own resources which could be, at least in the cases of Brazilian Traction and Mexican Light & Power, considerable indeed. Leaning more to the non-nationalist position, McDowall nonetheless portrays both the abilities and shortcomings of the Light's managers in dealing with the political changes wrought in Brazil.

Both books make substantial contributions to the history of international business by providing rare information on the historical relationship between finance capital and the strategy and structure of multinational enterprise. In addition, they contain extensive analysis concerning the special issues which impinge upon enterprises operating in developing countries from bases in Europe, Japan and North America, particularly the relationship between the state and the foreign enterprise. With a delightful prose style, both books greatly exceed the average standard of readability in business history. Above all, the authors' fresh methodological approach should appeal to everyone concerned about the present limitations of business history in the English-speaking world.

Johns Hopkins University GREGORY P. MARCHILDON

NOTES

1. This group includes, but is not limited to, the following: T. Traves, *The State and Enterprise: Canadian Manufactures and the Federal Government, 1917–1939* (Toronto, 1979); G. Tulchinsky, *The River Barons: Montreal Business and the Growth of Industry and Transport, 1837–1853* (Toronto, 1977); B. Forster, *A Conjunction of Interests: Business, Politics and Tariffs, 1825–1879* (Toronto, 1986); D. McCalla, *The Upper Canada Trade, 1834–1887: A Story of The Buchanan's Business* (Toronto, 1986); and K. Inwood, *The Canadian Charcoal Iron Industry* (New York, 1986). H.V. Nelles' pioneering work, *The Politics of Development: Forests, Mines and Hydroelectric Power in Ontario, 1849–1911* (Toronto, 1974) laid the methodological groundwork for Armstrong and Nelles' joint efforts, including their excellent monograph *Monopoly's Moment: The Origins and Regulation of Canadian Utilities, 1830–1930* (Philadelphia, 1986). McDowall's earlier work includes, *Steel at the Sault: Francis H. Clergue, Sir James Dunn, and the Algoma Steel Corporation, 1901–1956* (Toronto, 1984).
2. R.T. Naylor, *The History of Canadian Business, 1867–1914*, 2 vols. (Toronto, 1975); and M. Bliss, *Northern Enterprise: Five Centuries of Canadian Business* (Toronto, 1987).
3. The alleged distinction between 'passive' merchant capital and 'active' industrial capital and the inherent preference of the Canadian business community has been effectively challenged in recent years. For example, see L.R. Macdonald, 'Merchants against Industry: An Idea and its Origins', *Canadian Historical Review*, Vol. LVI, No. 3 (Sept. 1975).
4. M. Wilkins, 'The Free-standing Company, 1870–1914: An Important Type of British Foreign Direct Investment', *Economic History Review*, 2nd series, Vol. XLI, No. 2 (May 1988); A.D. Chandler, *The Visible Hand* (Cambridge, MA, 1977), pp.1–12.
5. These European utility conglomerates included the Belgian holding company SOFINA (Société Financière de Transport et d'Entreprises Industrielles) which had links to AEG (Allgemeine Elektricitäts Gesellschaft).
6. This is particularly evident in the American business history literature where much of the work follows the Chandlerian tradition of ignoring the state. In Britain, there are a few exceptions such as S. Tolliday, *Business, Banking and Politics: The Case of British Steel, 1918–1939* (Cambridge, MA, 1987); and G. Jones, *The State and the Emergence of the British Oil Industry* (1981).

7. So many books and articles, popular and scholarly, have concentrated on these two companies alone that any non-Canadian business historian could be forgiven for jumping to the conclusion that, outside of these enterprises, no other business organisations were of significance in shaping Canadian economic development in the seventeenth, eighteenth and nineteenth centuries.
8. Some Anglo-American scholars have not hesitated from tackling the relationship between enterprise and the state when dealing with Germany during the Nazi era; indeed they have made it the paradigm of their work: H.A. Turner, *German Big Business and the Rise of Hitler* (Oxford, 1985); P. Hayes, *Industry and Ideology: IG Farben in the Nazi Era* (Cambridge, 1987).
9. In one of the most blistering review articles to grace the pages of the *Business History Review*, Nelles attacks this orthodox 'non-view' of the state: H.V. Nelles, 'Commerce in a Cold Climate: Bliss on Canadian Business History', *Business History Review*, Vol. 62, No. 2 (Summer 1988).

BOOK REVIEWS

PETER BORSAY, *The English Urban Renaissance: Culture and Society in the Provincial Town, 1660–1770* (Oxford: Clarendon Press, 1989. Pp.xxii + 416; illus.; maps. £37.50).

There is little doubt that, in the two centuries before the Industrial Revolution, urban England underwent a transformation which radically altered the face of the town. What is debated, in a rapidly expanding body of literature, are the causes, timing and nature of that transformation, and its social and economic consequences, a debate to which Borsay's lucid and stimulating book makes a major contribution.

Drawing on a range of civic archives and contemporary printed sources, Borsay's thesis is that in the century after the Restoration, following a long period of fluctuating fortunes, many provincial towns experienced a sustained cultural revival. Central features of this were, firstly, the rise of neo-classical architecture, stimulated by the rebuilding of London, and secondly a new perception of a more unified townscape, expressed in the development of broad, straight, clean, well-lit streets and squares, and in the rising tide of investment in public buildings and interest in urban cartography. This upgrading of the urban image was reinforced by the explosion in demand for and provision of high-status leisure, especially in the larger county towns, resorts and provincial capitals. Theatre, music, ballrooms, pleasure gardens, libraries, antiquarian studies and the provincial press became elements in a diverse package of polite cultural pursuits. Greater commercial exploitation also occurred in a variety of sports such as bowling, cricket and horse-racing.

The primary economic cause, Borsay argues, was an acceleration of a long upward trend in the level of disposable income, permitting the conspicuous consumption of the post-Restoration landed classes, both as visitors and as permanent residents in provincial towns, as well as the socially emulative spending of growing numbers of urban professionals and merchants. For these latter groups, cheapness and accessibility to polite leisure were encouraged by competition between rival facilities within towns.

The existence of surplus wealth, however, does not explain why it was expended in towns. Borsay seeks an answer in changing social attitudes, the subject of his final and most provoking chapters. Towns pioneered greater opportunities to enhance one's social position via house design and decoration, personal fashion, leisure, the intellectual arts, and via the marriage markets fostered by the resorts – 'gold digging beneath the petticoats' as one Tunbridge Wells visitor described it (p.247). Two other renaissance attitudes, civility and sociability, by continually refining standards of taste, facilitated this pursuit of status. Status competition helped ensure the continued free exchange of wealth and power between the rising middle ranks and the landed classes, while civility and sociability forged a new sense of cultural community across this broader élite. An expanding and competitive élite was increasingly culturally segregated from those outside it. Polite culture looked outwards to London and Europe, and away from local custom and vernacular tradition. Access to élite recreation was controlled by rising entry costs, physical barriers, civic regulations and residential zoning. The urban renaissance was complex, but its overall impact, Borsay concludes, was socially divisive. It created and constantly reinforced distinctions between polite and popular cultures, thus sowing the seeds of the class differentiation of a future age.

While some urban historians may claim greater continuity with the Elizabethan town, most would not dispute Borsay's dating and description of the provincial renaissance. Its representativeness, however, might be questioned. Borsay admits the architectural renaissance was selective by town, and by area within towns. His study concentrates on towns near the top of the urban hierarchy. Before conclusions about cultural differentiation can be fully accepted, we need to know much more about the interface between polite and popular cultures in the majority of smaller towns (and suburbs), and about the coexistence of different types of space and conflicting uses of space within towns.

Economic and business historians are also likely to require a more exact definition of what Borsay calls the 'critical consumer threshold' beyond which the commercial exploitation of fashion and leisure became viable (p.212). While it is beyond Borsay's own remit, closer analysis of levels of investment and patterns of consumption for different groups within the urban élite is necessary in order to understand the economic foundations of this cultural revival. McKendrick's call for greater study of probate inventories, together with an imaginative use of early fire insurance records may prove useful starting points.

In conclusion, Borsay has written a book which deserves a wide readership. Through no fault of his own, this unfortunately may be incompatible with the quality and expense of its production, which, including 27 fine illustrations and 44 pages of appendices, somewhat mirrors the costly elegance of its subject.

University of Hull ROBIN PEARSON

THOMAS M. TRUXES, *Irish-American Trade, 1660–1783* (Cambridge: Cambridge University Press, 1988. Pp.xiv + 448; illus.; £30).

In teaching a course on Irish economic history for some years I have ignored the topic of Irish-American trade, except to make brief reference to the role of Cork in providing provisions for the colonies. Thomas Truxes has ensured that there will be no excuse in the future for such an unfortunate oversight. When the period opened in 1660 Irish merchants were free to trade across the Atlantic, but Irish manoeuvrability was curtailed progressively by the government in London. Most important was the opening salvo of 1663 requiring much of the trade to be funnelled through England, although the direct provisions trade was still permitted and formed the backbone of Irish exports, especially to the West Indies. Other branches of trade struggled on, but development was modest. The year 1731 – surprisingly little stressed in Irish historiography – saw a major change in English commercial policy: with the exception of a narrow range of enumerated articles – chiefly tobacco and sugar – two-way trade between Ireland and the colonies was to be allowed. Thereafter, trade flourished. In the early 1770s Irish exports to America were four and a half times the level of the mid-1730s, and between 1750 and the American Revolution the colonies took about 16 per cent of Irish exports, while goods arriving directly or indirectly from the colonies amounted to more than 21 per cent of Irish imports in the early 1770s. All partners in the trade benefited substantially: American producers gained a ready outlet for their flax seed and provided a good market for the coarser varieties of Irish linen cloth; colonial staves were made into barrels, some of which contained the salted beef, pork, butter and herrings which proved so popular in the West Indies; other timber products, wheat and flour, rum, and a range of other items swelled the tide of colonial produce arriving in Irish ports. But even after 1731 the English hand was rarely far away. Merchant houses in London, often with extensive Irish interests, played an important intermediary role in the trade, and the chief financial instruments were sterling bills of exchange, drawn on both sides of the Atlantic against London trading firms; unfortunately, the financial complexities of the trade make it impossible to draw up a comprehensive account sheet. In exemplary fashion, Thomas Truxes discusses economic developments on both sides of the Atlantic: indeed, he is as comfortable in the counting houses of Belfast, Cork and Dublin as of Baltimore, Philadelphia, New York, and the West Indies, and has much to say about the Irish personnel scattered throughout the colonies. Nor does he forget those less well-heeled emigrants who crossed the Atlantic in large numbers under the indentured servant system.

Business historians will be fascinated not only by the subject matter of this fine study, but also by the insights it provides into the nature of transatlantic publishing in the late 1980s. This book was produced in America relatively cheaply, costs being kept down partly by the expedient of photocopying the numerous tables and appendices produced by a word processor. This allowed the American price to be set at $39.50, but the English price is £30. Another, significantly shorter, book which I reviewed recently – produced by CUP in England – is also selling at $39.50 in the US, but at £22.50 in England. Clearly, Irish and English readers could not be allowed to buy a larger book so cheaply.

Such carping does not in any way relate to the quality of the scholarship in the book. Thomas Truxes has written an old-fashioned book in the best sense of the phrase: it is packed with valuable information on all aspects of the trade, and will justifiably stand alongside that classic on Anglo-Irish trade by his 'patient mentor', Louis Cullen.

University of Hull DONALD WOODWARD

R.S. FITTON, *The Arkwrights: Spinners of Fortune* (Manchester: Manchester University Press, 1989. Pp.xiv + 322. £40).

The temptation to rush into print is one which many historians cannot resist. The late R.S. Fitton did not succumb to that temptation. As Professor Mathias makes clear in the foreword to this book, Fitton was a perfectionist who took few into his confidence, always worried lest premature publication in the form of journal articles would allow others to overtake him. The saddest thing of all is that Fitton died in 1987, shortly before this work (the product of more than 30 years' research) went to the printers. While it is true that much of the Arkwright story was already known, there is a considerable amount of new material here, particularly family papers relating to the celebrated patent trials, together with account books and letters which shed new light on estate interests and personal affairs.

The two central figures in this story are of course Richard Arkwright (knighted in 1786) and his son Richard, father of 10 children and worth some £3.25 million at the time of his death in 1843, aged 87. Fitton recounts Arkwright's move from Preston to Nottingham in 1768, the 'momentous move' to Cromford and the subsequent spread of the Arkwright cotton empire to Lancashire, Staffordshire and Scotland. There is excellent coverage of the generation and accumulation of wealth by Richard I who began to show signs of affluence from 1775, and the continual changes in his partnerships are detailed with exemplary thoroughness. A man never far from litigation, above all in the Great Patent Trials of the 1780s, Richard I comes across as not merely ambitious and tough, but unpredictable and frequently unpopular. As Matthew Boulton noted in 1781, 'it is agreed by all who know him that he is a Tyrant and more absolute than a Bashaw'. Throughout this book, Fitton lets the evidence speak for itself rather than offering his own judgments, though it is clear that Richard I would go to any lengths to protect his interests and property. This is illustrated in his military operation in 1779 to protect Cromford with men and heavy weaponry from a mob which he believed was burning its way from Bolton to Manchester and Stockport en route for Cromford. In fact the mob never made it to within 50 miles of the Cromford mill.

In general terms Richard I was an enthusiastic member of the 'waste not want not, time is money' school. He worked extremely hard, from 5 a.m. to 9 p.m., and, in order not to lose time, insisted on being drawn in his carriage by four horses at high speed. Eventually, this hectic pace took its toll, though he seems to have coped remarkably well with his chronic asthma.

Even before his father's death in 1792, Richard II was already one of England's leading cotton spinners, but under the terms of the former's will he inherited the entire cotton empire. Within a year of his father's death, Richard II had sold several mills, and showed a much greater interest in investment in the Funds than his father ever did, having invested a total of about £1.5 million by the early 1840s. Fitton explains the purchase of successive landed properties, including Hampton Court, bought for £230,000 in 1809, and his multifarious loans to new and old blood families. The latter included money lent to the high-spending and extremely sociable Georgiana, Duchess of Devonshire. What comes across most clearly is the enormous sums of money involved: by 1823, for example, Samuel Oldknow's indebtedness to Richard II stood at almost £206,000. Also staggering were gifts to his children, totalling some £740,000 between 1802 and 1841.

Apart from a rather woolly discussion of the profitability of cotton enterprises in the early nineteenth century, Fitton describes with clarity Richard II's irresistible rise to legendary wealth. His sons, sent to public school and Oxbridge, failed to show much interest in business. Joseph, for example, showed an excessive interest in alcohol while at Trinity College Cambridge, went on to become a vicar but could only be depended on to make an appearance in the pulpit on Christmas Day, and is best remembered as Master of the Essex Foxhounds. There is much raw material here for subscribers to theses of third generation decline.

Despite the fact that this is a narrative account, largely eschewing debate or judgement, it is an important book about an interesting and powerful family and it is a significant addition to business biography. If one can criticise the author for being too close to his subject at the expense of broader themes, one must applaud his diligence in meticulously piecing together a coherent and highly readable story from a patchy and disparate array of sources.

Bristol Polytechnic PHILIP OLLERENSHAW

HOH-CHEUNG MUI and LORNA H. MUI, *Shops and Shopkeeping in Eighteenth Century England* (London: Routledge, 1989. Pp.xv + 381; maps, £45.00).

'A major study of a major subject' proclaims a preview on the unassuming dustcover of this hefty looking tome. And so it is. It is quite simply, to my knowledge, the most detailed historical examination of this sector of the economy to appear in print, with implications for both business and social historians.

Obsessed with production, consumption and international trade, economic historians have unduly neglected the crucial domestic, distributive sector without which all the other activity would have been futile. Although the general impression here is of shops responding to, rather than creating demand, it is far cry from the 'traditional retailing' glibly assumed by students of the apparently more dynamic nineteenth century. Jefferys, Clapham and Alexander, the chief proponents of the retail revolution in this century, are firmly castigated for their simplistic, unjustified assumptions. The authors show in glorious detail that shop numbers grew more steadily over a longer period, stretching back to at least the mid-eighteenth century. The South, where a wage-based market economy was already firmly established, was well served by this time; the North, spurred on by industrial growth, was to narrow the gap by the end of the century, although the ratio of people to shops remained inferior. Only the remote regions of Wales and Scottish Highlands escaped significant expansion. By 1800 with a national ratio of about 30–35:1 the authors consider that the number of shops were 'swollen well beyond the needs of society'. Petty shopkeepers accounts for perhaps 75 per cent of this expanding total, men and women with a limited trade often based largely on tea, sugar, candles and a sprinkling of other non-perishable household goods, nearly all of them obtained from their larger brethren, the minority of 'substantial tradesmen'. This latter group was also experimenting with sales strategies more commonly associated with the late nineteenth century onwards; by 1800 'price ticketing, leading articles, ready-money sales, mail order services, free delivery ... had all become the stock-in-trade of at least some shopkeepers'. All this is impressively supported by judicious use bankruptcy records, tea licences, excise accounts, government financial surveys, shop tax returns, scattered retailers' records and press advertisements. Much of the densely packed text is taken up with assessing and displaying the value and limitations of such sources. It is, indeed, a fine model for any research student to follow.

The local studies by Roger Scola (whose extended work on Manchester will hopefully be appearing posthumously) and Ian Mitchell (the latter sadly not acknowledged anywhere in the text) may have already hinted at several of the Muis' conclusions, while their demolition of the reliability of the early commercial directories, especially Pigot's 1820s series so heavily used by Alexander, although more thorough than any so far in print, really only confirms what is already known – that small shopkeepers were not included.

However, nothing on this impressive scale has appeared in print, and, far more than ever before, this book pushes the dating of the 'retail revolution' back into the eighteenth century, paradoxically just at the time when economic historians have been bringing forward many features of manufacturing development into the nineteenth century. The authors show themselves well aware of the danger of pursuing this line too far. They recognise that innovation must not be confused with diffusion, that many shopkeepers were either hostile to or uninvolved in the new sales strategies and that there were regional and sectoral differences. Nevertheless, the impression they leave is one of widespread change. One has to search for the qualifications which suggest that the new features were more pronounced in the cotton goods and tea trades, affecting particular dealers with customers in 'the middling ranks', rather than the numerous petty shopkeepers who served the working class, or the 'traditional' purveyors of luxuries to the rich. Despite the existence of provincial evidence, too, London seems rather over-represented in the examples quoted, especially in the extended study of the tea trade on which the authors are undisputed experts for this period. Despite the title, too, much of the change in retail methods seems to have occurred only in the 50 years after 1780.

But none of this detracts from the value of this stimulating work and it is to be hoped that it will inspire others to explore the retail sector still further, perhaps concentrating more on goods of British origin or on the still neglected early to mid-nineteenth century. They have in this book an outstanding example of what can be achieved, but also indications of just how much sustained effort is entailed.

Lancaster University MICHAEL WINSTANLEY

RICHARD RODGER, *Housing in Urban Britain, 1780–1914: Class, Capitalism and Construction* (London: Macmillan, 1989. Pp.89. £4.50).

This is a very welcome addition to the Economic History Society's 'Studies in Economic and Social History' series, covering a topic which is of relevance not simply to urban historians, but also more generally to those with an interest in social change and the formation of Victorian attitudes and moral values. It provides an assessment of both the images and reality of life in nineteenth-century towns, and as a consequence gives a useful insight into the origin of more recent perceptions of urban deprivation and inner-city problems. Like other books in the series its principal aim is to provide a comprehensive introduction to the topic and a review of current research findings and discussions. Its approach, inevitably, is wide ranging covering many different perspectives on housing in urban areas. There are sections which deal with landownership, the building process, building regulations and the variations in housing type both between different social classes and also between different localities. However, as the subtitle suggests, the underlying theme is essentially one of housing development as a product of the maturing capitalist economy. Poor housing is seen as resulting from the unequal forces of speculative development for private profit and the restrained effective demand for housing from the low wage earning majority or urban dwellers.

Social polarisation within the nineteenth-century town is represented by the contrast between the deepening problems of overcrowding and environmental deterioration in the core areas of towns and the spread of the increasingly affluent and self-conscious 'middle-class' suburbs. Housing for the poor meant essentially space to live in with an inadequate provision of the basic necessities of life, whereas for those who could afford it the new housing on the periphery of the expanding urban area was more a mark of status and new moral attitudes. Spatial segregation provided a clear indication of the emerging structure of later Victorian society.

The book also identifies the reactions to this process and particularly to the urban 'crises' it helped to precipitate. Agitation for sanitary reform and environmental improvement in the 1840s led to intervention in the form of local and central government legislation. This provided a framework for later development, ensuring improvements in housing quality but failing to solve the problem of providing adequate housing for the poorest section of urban society. Philanthropic initiatives were also significant but only had a very limited impact mainly because, like the early developments in council house provision, the cost of building property had to be recouped in the form of rents and those in most need could never afford to pay enough. In the later sections of the book the theme of the 'housing problem' is returned to in the context of the shortage of housing in towns at the end of the nineteenth century. The downturn in the building cycle, largely caused by external economic factors, created tensions both within urban areas and between local and central government over the financing or urban management. These tensions erupted on the surface as conflicts between landlords and tenants and contributed towards the growing political awareness of the working class. They also had a profound effect on attitudes towards housing policy and town planning in the twentieth century.

The book contains an annotated bibliography covering the extensive literature on the subject and although, as is pointed out, this is not exhaustive it does also include a series of pointers to other bibliograpical sources on housing and urban development. In general the book provides a very useful and stimulating reference for further study in this area.

Liverpool Polytechnic STEPHEN JACKSON

L.M. CULLEN, *Eason & Son: A History* (Dublin: Eason & Son, 1989. Pp.xi + 426. £IR22.00).

Although much valuable research has been produced on Irish economic history over the last two decades, business history – with notable exceptions like Moss and Hume's history of Harland & Wolff – remains a neglected area. Cullen's history of Easons, admittedly a company of the second rank, is, therefore, greatly to be welcomed.

Eason's started life in 1850 as the Irish branch of W.H. Smith's – it is extraordinary how many Irish businesses were founded by non-Irishmen. In 1856 Charles Eason, manager of Smith's railway bookstall in Manchester, was transferred to Dublin. Ownership came into the Eason family almost by accident. During the 1880s, W.H. Smith became increasingly prominent in Conservative and Unionist politics. His association with Orangeism posed difficulties for the firm, not least because it was a leading publisher of Catholic prayer books. The problem came to a head in 1886 when Smith was appointed Irish Chief Secretary, and set about drawing up a Coercion Act. At a time of heightened political conflict, as Eason pointed out to Smith, this laid the firm 'open to attack' from trade rivals. As a result, Smith severed his connection with the business, selling it to the Eason family.

Until the Great War, the firm's history paralleled that of W.H. Smith's. Its main activity was in the wholesale distribution of daily newspapers, weeklies, periodicals and books. It had subsidiary interests in publishing, the production of stationery, organising advertising and operating bookstalls on the railway network. It also possessed a retail outlet in O'Connell Street, Dublin. With increasing literacy and incomes in Ireland, the business prospered.

After 1914, however, the firm faced a series of difficulties not encountered by its English counterpart. In the 1916 uprising its retail outlet was destroyed. During the Anglo-Irish war of 1919–21, and even more so during the Civil War which followed it, the firm faced distribution difficulties because of the disruption to the railway network. During the period from the early 1920s to the 1950s Easons suffered not only because of depressed incomes in Ireland but also from problems created by various forms of censorship. First, censorship from below, led by clerical or republican groups, which involved boycotting or, worse, the physical destruction of newspapers. Second, there was moral censorship imposed by the state. This became important after the passing of the 1929 Censorship Act, which led to the banning of certain English newspapers – the most celebrated being the *News of the World* – and the close vetting of others to weed out articles or advertisements connected with sexual matters or contraception. Even *Exchange and Mart* felt the censor's wrath on occasions. Censorship, coupled with the imposition of protective duties, meant a considerable fall in Easons' distribution of English newspapers. The war brought further problems. Political censorship reinforced moral censorship. Additionally, newsprint was in short supply and distribution became difficult because of lack of petrol for vans, and coal for trains.

The firm's postwar recovery was slow. Low economic growth and high emigration kept the market depressed. Not until the 1960s, when the Irish economy experienced a boom and censorship was relaxed – allowing the freer distribution of English publications – did conditions improve.

The history of Easons is one of survival rather than real success. The firm inherited from Smiths a virtual monopoly of newspaper and periodical distribution in Ireland, outside of Belfast and Cork. This, in what was a limited and protected market, it maintained. But, perhaps inevitably given its size and peripheral position, it showed no inclination to extend its operations into overseas markets. In this it was typical of many Irish businesses. Still, the firm's history is an interesting one, interestingly told. Chapter 13, 'The problem of "Evil Literature"' – an examination of the censorship problem in Ireland – is especially recommended. *Eason & Son: A History* compares well with Charles Wilson's excellent book on W.H. Smith, *First with the News*. My only criticism of the former is that, after 1886, few comparisons are made between the two companies. This would have set the history of the firm in a wider perspective.

The Queen's University of Belfast D.S. JOHNSON

ROBERTA ALLBERT DAYER, *Finance and Empire: Sir Charles Addis, 1861–1945* (London: Macmillan, 1988. Pp.431. £35.00).

Although the subject of this study is the life of Sir Charles Addis, his career makes legitimate the bold type used for the book's main title, *Finance and Empire*. It is not a monograph or analytical treatment of this theme, but a biographical study which illuminates the subject through an account of the activities over many years of a remarkable man. Some attention is given to the family background, personality and private life of Addis, but largely only in order to explain his ambitions, his commercial and political values, and his public career. Dr Dayer also recognises the need to describe the circumstances in which Addis practised his craft as financier and political adviser. So we are told about the changes in British monetary policy after the First World War, the problems of war debts and reparations, the ambitions of the Americans and above all the tormented and turbulent history of China from the 1880s to the Second World War. Dr Dayer makes ample use of her own and many other published studies of these matters. Occasionally one wishes for a rather more leisurely scene-setting and a fuller exposition of the positions taken by other actors in the dramas she unfolds. She is driven rather, sometimes remorselessly, by the extraordinary riches of the Addis papers and the considerable volume of additional primary material she has also consulted in Britain and in the United States. The result is often detailed yet well-ordered and normally lucid enough.

On one level Dr Dayer presents the story of a man's personal success. Addis's career was by most reckonings a considerable achievement. He was born in 1861, a clergyman's son, left school aged 16, did not go to a university, became instead an apprentice to a firm of importers, had a moderately wild time as a young man in rebellion against his father, but then in 1880 joined the Hongkong and Shanghai Bank in London as a clerk. He left for Hong Kong in 1883, served subsequently in Shanghai, Peking and elsewhere, returned in 1905 to manage the London office, and became a director of the Bank of England in 1918, one of the British financial experts at the Genoa Conference in 1922, the British director of the Reichsbank in 1924 and an indispensable financial authority to successive British governments. He was knighted in 1913, his picture was hung in the National Portrait Gallery and he died at the age of 84, surrounded by tributes and grandchildren.

Yet on another more interesting level his career exemplifies failure. It was not his alone, but a failure of the British financial community and the British imperial system to maintain into the 20th century the status and rewards they had enjoyed when Addis was a young man. If failure is too strong a term, the record at least shows Addis and others struggling with only partial success to slow down the processes of decline. He probably achieved less than Dr Dayer concedes.

Addis believed that the principal challenge to British supremacy, particularly after the First World War, came from the United States. The central section of the book deals with problems of European reconstruction. Dr Dayer shows Addis recognising the need for American involvement but resenting their insistence on the immediate repayment of war debts and their refusal to link the issue to German reparations payments. Addis was involved in the Dawes settlement in 1924 and later in negotiating the Young plan. Attempts to deal with the Americans (and Germans and French) were exhausting. Addis also wished to restore London as the financial centre of the world by a return to the gold standard. He at least acknowledged subsequently the inability of the national economy to sustain that pretence, and thereafter accepted the need for a managed currency. Dr Dayer at this point offers fresh speculation on the Bank of England's role in the sterling crisis of 1931 and the consequent attempt to preserve Britain's national interests and imperial role through the sterling area.

Dominating the book and Addis's career, however, is China. Here Dr Dayer vividly describes the efforts of Addis and the Hongkong and Shanghai Bank to preserve British interests against American intruders. Exclusion of the United States was neither desired nor possible. The practice endorsed, indeed encouraged, by government was to try to incorporate the United States as a partner, preferably junior partner, in the European control of Chinese finances and development from which the British had so long benefited. This preoccupation with the United States made even the astute Addis unreliable as a prophet of the real sources of change in the Far East. He appears to have been surprised by Chinese nationalist resentment of European domination and also taken aback by Japan's aggressive assertion of her own ambitions in China. When Addis died in 1945 much of what he had tried to preserve lay near to ruin. The affairs of the Far East were soon to be dominated by operators he had tried to frustrate, the Americans and the Communists. But at least Hong Kong, and the Hongkong and Shanghai Bank, were to remain as relics of Britain's once widespread financial and imperial supremacy.

University of Lancaster STEPHEN CONSTANTINE

GREGORY ANDERSON (ed.), *The White Blouse Revolution: Female Office Workers since 1870* (Manchester: Manchester University Press, 1989. Pp. 172. £27.50).

More women are now employed in office work than in any other single occupation and the 1981 Census recorded that 74 per cent of 'clerical and related' workers were female. *The White Blouse Revolution* is a collection of seven essays which seeks to trace and explain the gradual feminisation of office work since the late nineteenth century. The first essay, from which the book takes its title, is by the editor, Gregory Anderson, and provides an overview of the expansion of female office work. The next five essays deal in greater detail with particular aspects of the process in Great Britain, while the final piece by Margaret L. Hedstrom provides material for comparison by reviewing the experience of American women office workers from the 1920s to the 1960s.

Each author takes a very different approach to the subject. Gregory Anderson places changes in women's employment within the context of the broader changes in economic organisation, while Jane E. Lewis in her essay on 'Women Clerical Workers in the Late Nineteenth and Early Twentieth Centuries' emphasises the extent to which the practice of confining women to certain grades of office work arose from the cultural expectations of both men and women, and often ran contrary to strict economic rationality. Particular fields of office employment are examined by Susanne Dohrn, who analyses the experience of the first women clerks in banking and insurance in the nineteenth century, and by Meta Zimmeck, who traces the fate of women civil servants after the First World War, in the face of fierce competition from ex-servicemen. These studies also deal with the institutional devices applied to women office workers, such as separate grading systems and the marriage bar. Gladys Carnaffan details the difficulties of obtaining training in clerical skills in the late nineteenth and early twentieth centuries. The period since the Second World War is dealt with by Rosemary Crompton, who emphasises that while typing and shorthand had long been largely female occupations it was not until after 1951 that the majority of clerks and cashiers were women.

The contributions bring together themes which have appeared in writing on women's employment generally, and relate them specifically to office work. In examining the reasons for the feminisation of clerical labour there is general agreement on the importance of the lower cost of female employees, and of women's own perceptions of the respectability of office work. All the contributions are clearly written, though I found most interesting those by Dohrn, Lewis and Zimmeck, which included references to research on particular institutions to give specific examples of the general issues under discussion. The final two essays, which deal with the period since the Second World War in Great Britain and the United States, are particularly useful in drawing attention to issues such as the impact of modern 'scientific' management, office mechanisation, and the reasons for the increase in the employment of married women in office work.

There are no startlingly new conclusions, but there are valuable insights into the ways in which the employment of women has been manipulated and managed within bureaucratic organisations, and into the role of women's own expectations. Each essay is a separate entity, and though there are some cross-references there is also a certain amount of repetition, yet there is by no means complete coverage of the range of women's clerical work. There is only passing mention of women workers in the offices of manufacturing firms. Some of the pieces are of marginal relevance for the business historian, but anyone who is researching a specific institution should find that the questions they raise will prompt lines of inquiry. It is also clear that there is room for more detailed research on the introduction of women office workers into individual businesses and on the methods used to manage them.

Queen Mary and Westfield College
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GLORIA C. CLIFTON

HAROLD PERKIN, *The Rise of Professional Society: England since 1880* (London: Routledge, 1989. Pp.xvi + 604. £40.00).

In 1969 Harold Perkin published a study of *The Origins of Modern English Society, 1780–1880*. In this sequel, that society is revealed not as one of entrepreneurs apparently dominant in 1880 but a 'society of experts', deriving from the group Perkin earlier labelled the 'forgotten middle class', namely the professions. The division of labour in modern society, he argues, has valorised the primacy of human capital over landed and industrial capital, adding to the ranks of the pre-industrial professions, new technological, welfare, and managerial ones. The horizontal class antagonisms of the later nineteenth century have been largely replaced by vertical career hierarchies, defined by trained expertise. In turn, the aristocratic, entrepreneurial and working-class ideals which competed unevenly in Victorian Britain have been supplanted by the professional social ideal, essentially an ethic of service to client and society. Yet this ideal itself is internally divided, for Perkin suggests, surely too simply, that the fundamental division in Thatcher's Britain is between private sector professionals (dominating the Tory south-east of England) seeking equality of opportunity, and public sector professionals (dominating the politics of the north and west) seeking equality of outcome.

Perkin's professional society thus represents a sophisticated historical reworking of ideas associated with Burnham's *Managerial Revolution*, and Bell's *Post-Industrial Society*. (Oddly, Durkheim's *Division of Labour in Modern Society* is missing.) It builds imaginately on the framework set out by Middlemas's analysis of the corporate bias of the British state in the twentieth century. It also incorporates some of the results of Perkin's SSRC study of the economic worth of élites, revealing the decline in the fortunes of land and industry and the rise of not so wealthy career managers. But Perkin's chief concern is to show the depth of the social impact of professional values. He does this not only by estimates of the rising contribution of human capital to national income and by the number of professional managers and administrators relative to the declining number of entrepreneurs, but by emphasising what he calls professional conditions of work – paid holidays, sick leave, and pensions. The welfare state itself is seen as created by professionals, for professionals, and as a means of professionalising the working class by guaranteeing rights previously associated with traditional professions. Thus, in what Perkin himself seems to see as the *reductio ad absurdum* of his own argument, the unemployed, with rights to benefits and pensions, are true members of a professional society whose ideal contains the possibility of universality denied to land or capital.

Yet it is difficult at this point to accept several of Perkin's underlying assumptions. For example, his 1969 analysis of class ideals, which remains fundamental to his thesis here, is one which few historians have wholeheartedly accepted. Above all, there is a major ambiguity in the term profession itself. On the one hand, it is defined as the improved human capital which results from training and expertise; on the other, it is defined as a form of property, an entitlement to a flow of income from the deployment of expertise. If we are to accept this view, are we to judge Perkin the professional historian not by the exercise of the historian's craft but by the size of the flow of income deriving from his publications? By the former criterion, while necessarily selective in drawing on a vast range of secondary and primary sources, this book is a brave and masterly attempt to apply broad hypotheses and new organising principles to recent history. It poses a clear challenge to the business historian to address issues beyond the boardroom, relating corporate behaviour to an understanding of society as a whole.

London School of Economics A.C. HOWE

A. HEERDING, *The History of N.V. Philips' Gloeilampenfabrieken: Vol. 2, A Company of Many Parts.* Translated from the Dutch by Derek S. Jordan. (Cambridge: Cambridge University Press, 1989. Pp. xiii + 371. £30).

It is remarkable that what is today one of the foremost firms in the world's electrical and electronics industry should have come into being in a small Dutch provincial town, and more remarkable still that it should have pushed its way to the front in competition with the electrical giants of its day, particularly AEG and Siemens & Halske in Germany and General Electric in the USA. In his first volume Heerding dealt with the early development of the incandescent lamp and the foundation of Philips' business, and in this one he sets out an elaborate account of the growth of the firm from 1891 until 1922.

Philips succeeded where many of its contemporaries failed. The essential elements in its success seem to have been intense dedication to the rapidly developing technology of the incandescent lamp industry, enterprise in developing export markets, and great skill in dealing with the elaborate cartel arrangements of the industry. Moreover it concentrated single-mindedly on incandescent lamps, whereas for the great German and American firms they were one product among many.

All this was backed up with enlightened policies of personnel management and concern for employees' welfare, including housing and education, thoroughly in the manner of the best employers of the day. One is reminded continually of William Lever at Port Sunlight, but unlike Anton and Gerard Philips he did not have to struggle, as a Protestant, with the local politicians of a small, largely Catholic, Dutch town, intensely suspicious of the influx of workers, as the firm prospered, from other parts of Holland.

The market for incandescent lamps is not described in the same detail as Philips' technology and its commercial policy towards its competitors. For whom was the company making lamps, and where was demand increasing fastest? Was it principally a demand from large users, or from private households? Was Philips shrewder or more painstaking than its competitors in exploring the marketing opportunities open to them?

Heerding makes few concessions to those of his readers who are not educated in the technology of the incandescent lamp industry. In particular, the method of calculating the lighting power of lamps was clearly very different in the period Heerding is dealing with from methods used today, but we are not told how to relate the one to the other. The importance of the 'half-watt lamp' (p.311), which was clearly very great, is therefore incomprehensible. What *was* a 'half-watt lamp', and why did it succeed in the market?

In general, the thoroughness of Heerding's exploration of his subject is not matched by the lucidity of his presentation. Everything is there, but you have to work hard to get it.

Business History Unit, W.J. READER
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DAVID A. PRETTY, *The Rural Revolt that Failed: Farm Workers' Trade Unions in Wales, 1889–1950* (Cardiff: University of Wales Press, 1989. Pp. xiv + 291; illus.; map. £30.00).

As Howard Newby once observed, the more one moves from Swing and Tolpuddle to the present day, the less the attention paid to the farm worker by historians of organised labour. The episodic achievements of agricultural trades unionism have insufficient appeal to those who want to tell a success story. The causes of failure necessarily loom large in the work of historians like Dunbabin, Horn and Armstrong who have been sufficiently untroubled about associating their names with failure as to show an interest in the subject.

Pretty's book is concerned with the Welsh aspect of agricultural trades unionism, and thus with the distinctly Welsh dimension of its failures and less frequent successes. In tracing the evolution of agricultural trades unionism in Wales from the late 1880s, Pretty recognises three distinct periods of activity. The Tithe War, which brought a sense of heightened class consciousness to farmers, made labourers aware of the advantages of acting as a group to pursue their own demands. But such awarenesses were only translated into action where exceptional leaders were able to provide something of the cohesion and organisation which were intrinsically lacking in the customary milieu of the labourer. Thus the protest in Anglesey and Caernarvon during the years 1889–93 was very much that of its leader, John Owen Jones ('ap Ffarmwr'). The second phase corresponds with the wholly exceptional circumstances of the First World War. High rates of food-price inflation, the creation of district wage committees, labour shortages, the implementation of the Corn Production Act of 1917, and the organisational assistance of non-agricultural unions provided labourers with the inducement and the means to press their demands. The booming incomes of farmers gave them less reason to resist. The year of 1920 was a high water mark in the fortunes of the farm workers' unions. The decontrol of agriculture and the economic slump of the interwar years saw the collapse of union activity. Even the revitalising effects of another war could not surmount the self-destructive apathy of the labour force. Those dissatisfied with their lowly position at the foot of the wages league continued to vote with their feet, leaving behind an ever-diminishing, socially-isolated and weakly-unionised residuum.

There is little in this account which will be unfamiliar to historians of organised labour in English agriculture. But Pretty's conclusions are novel, even iconoclastic, within the context of the historiography of late nineteenth- and early twentieth-century Wales. In England, Methodist lay-preaching provided a customary apprenticeship for potential union leaders, including Joseph Arch. In Wales, by contrast, Nonconformism's natural ally was the middle-class tenantry, not the labourers whom those tenants employed. The Welsh variant of liberation theology helped secure the tenants' victory over English landlords. Contrary to the received view of a transcendant Nonconformist radicalism, it showed little concern for the oppressed under-class of farm labourers.

The book is, to quote its author, 'an anthem to the neglected pioneers of the rural labour movement'. In this respect it undoubtedly succeeds. The fluctuating fortunes of union activity in Wales are traced through an impressively-researched survey of the administrative history of successive bouts of union activity. The contributions of individual union organisers, on whom so much depended, are accorded full recognition. Less complete is the book's portrayal of the world which the labourers themselves inhabited. The class-conflict interpretation of social relations in the Welsh countryside, as presented here, needs to be reconciled with the communalism and social solidarity seen by other writers. The historical sociology of rural Wales appears to require re-examination.

University College of Wales, Aberystwyth JOHN R. WALTON

KRISTINE BRULAND, *British Technology and European Industrialisation: The Norwegian Textile Industry in the Mid-Nineteenth Century* (Cambridge: Cambridge University Press, 1989. Pp. 193. £22.50. $39.50).

This book examines an important but neglected subject, the transfer of technology from Britain to Europe: in particular it deals with the establishment of textile factories in Norway between 1845 and 1870. Dr Bruland relates this local initiative to the general process of industrialisation on the Continent. She has used local business archives, supplemented by official records of population, insurance and taxation in order to reveal in detail how factories were established and expanded. Her work is unusual in its theme, in its use of business records and in its international perspective, a method which inevitably evokes comparison with the work of Dr David Jeremy. Norway differed, however, from New England: its import of modern industrial technology began only in 1845 after the repeal of the British prohibition on the export of machinery, so testifying to the effectiveness of the British policy of protection of the sinews of its industrial power. Norwegian textile entrepreneurs developed contacts with some 330 British firms, contacts which proved indispensable to the industrial development of their country.

Bruland reveals for the first time the wide range of activity of British engineers. Machine-makers responded immediately to the opening of export markets. Almost all firms, however small in size they might be, proved eager and able to serve the needs of foreign clients. Firms extended their range of products, making power-looms as well as spinning frames, and so enhanced the degree of competition within the industry that the export market became the preserve of all rather than the prerogative of a few. Such firms supplied not only machines but also a full package of supporting services in order to enable their clients to overcome the teething problems inseparable from the establishment of a pioneer enterprise. In this sphere Bruland demonstrates the continuing importance throughout the century of the migration abroad of skilled British workmen.

This work will occupy a special position in the fields of the history of business, of engineering and of textiles by virtue of its effective use of business records and its questioning of the adequacy of the generally-received interpretations of the industrialisation of Europe. Text books have always emphasised the key role played in industrial development by the transfer of technology but in such books 'the process of technological change is conspicuous by its absence' (p. 15), their authors preferring to emphasise the preconditions necessary for industrial development rather than the process itself. Now attention has been focused upon this inexplicable omission and Bruland's work has gone a long way towards filling a major gap in our knowledge. Her book should appeal to a wide range of readers, with its stimulating discussion of the historiography of economic development, its core of invaluable empirical data and its 24 tables of statistics. It must be added that the book would have been even more valuable to the world of scholarship if the author had been prepared to generate estimates of Norway's spindleage and loomage for her terminal date of 1875. It does however seem clear from her evidence that the technology transferred from Britain was that of power-loom weaving even more than that of machine-spinning, a process in complete harmony with contemporary trends of development on the rest of the Continent.

Some foreign scholars may prove reluctant to accept an Anglocentric interpretation of the industrial development of Europe wherein the role of British engineering firms assumed decisive importance. In support of such reservations it might be argued that Bruland has underestimated the extent to which textile engineering had developed on the Continent by the 1840s. Such a point may safely be left to future historians for discussion and resolution. As a contribution to the history of British engineering, Bruland's work remains of great importance because of the sheer lack of reliable information upon the history of mechanical engineering. As a contribution to international business history her book represents a notable achievement. The publishers deserve to be congratulated upon their sensible decision to place footnotes where they belong, at the foot of the page.

University of Manchester D.A. FARNIE

ALAN WARE, *Between Profit and State: Intermediate Organisations in Britain and the United States* (Cambridge: Polity Press, 1989. Pp.xii + 308. £32.50).

Democracy in Britain and the United States in the nineteenth and twentieth centuries has found itself set between two major forces, those of the market and of the state. These, paradoxically, both pose a threat to it and also provide the economic and legal supports which make its continuance possible. There is however a third force, the intermediate organisation, which can play a vital role in preventing the liberal democratic form from being swamped by market forces or crushed beneath the weight of state bureaucracy. Under this title come mutual benefit societies such as building societies or co-operatives, charitable organisations, churches, universities and cultural institutions. These can provide goods and services which the market will not; cater for minority groups whose well being both state and market may ignore; and provide social cement for bringing people together in ways which market individualism or state officialdom could not. Like the British Constitution, beloved of Burke and Blackstone, the intermediate organisation seems to provide a crucial cog in the liberal democratic mechanism of checks and balances.

Alan Ware supplies a corrective to this neat mechanistic ideal, and shows the actuality of the role of intermediate organisations to be one of much greater complexity. On closer examination, he shows that, in contemporary British and American society, they relate much more closely to either the market or the state than the pluralist ideal would allow for. Participatory working-class organisations like building societies have shed all trace of their origins and become an almost indistinguishable part of the financial world. As recent events in the Abbey National have shown, they are capable of indulging in profoundly undemocratic behaviour in order to gain market advantage. American universities allow their football and basketball teams to dilute amateur athletic ideas with the muddy but rich waters of professional sport. A voluntary organisation like the YMCA whose swimming pools and gymnasia were designed to bring young men in from the sordid attractions of the street, finds itself in the physical fitness business along with the likes of Jane Fonda. Charities like the RNLI may still remain their purist distance from state funding, but other welfare organisations find themselves increasingly paid as agents of government for the distribution of welfare goods or the carrying out of social services. Over 60 per cent of the income of non-religious charities in Britain and the United States now comes from sales, fees and charges with only 9 per cent and 22 per cent respectively coming from gifts and donations. At the same time, fund raising has moved on from the little old lady with her collecting tin and tray of flags to the rock star and the 'telethon' with their mass communication techniques.

This is a timely book which throws light on a dark area too little studied by political scientists, economists and historians. Despite the obvious differences in geographical size and government structure, Ware's setting of his study within a comparative Anglo-American framework is an apposite one. In both nations, the state developed relatively weakly. Intermediate organisa-tions such as building societies, settlement houses and charity organisation societies, seeded in the one, took root easily in the other. Above all the legal framework within which such organisations stood was a common one, the 1601 Statute of Charitable Uses. Indeed, as Ware points out, this now constitutes a common and central weakness. A 380-year-old statute is too ill-suited to modern times to allow for proper definition and effective regulation of the intermediate sector. This leaves great potential for abuse, not least in the United States as Iran–Contra and the murky dealings of the Vincent Foundation on behalf of the Marcos family have shown. Oh, charity, what crimes are committed in thy name!

If this study has a weakness, it is perhaps that Ware tends to foreshorten the historical background and thus make recent changes seem more striking then perhaps they are. A study of nineteenth-century charity, such as that conducted by Frank Prochaska, would find examples of market-oriented fund raising (the Anti-Corn Law League bazaars), of political involvement by charitable organisations (the Anti-Slavery Society for one) and of dubious activities by charitable entrepreneurs (Godfrey Ablewhite in Wilkie Collins' *The Moonstone* would serve as a fictional example). Volunteering as an important element in dealing with poverty predates the Charity Organisation Society by many decades, and is traceable back at least to the visiting societies and domestic missions of the early nineteenth century. Women's participation in voluntary organisation was 'legitimised' in Britain and America long before World War One.

These are relatively minor and specialist quibbles, however, and reflect the inadequacy of historical literature on intermediate organisations of both the middle-class charitable and the working-class mutual benefit variety. This is a clearly written, admirably jargon-free study of a crucially important aspect of Western liberal democracies.

University of Manchester MICHAEL E. ROSE

RON LEES, *A History of Sweet and Chocolate Manufacture* (Surbiton: Specialised Publications, 1988. Pp.241. £40).

This is an odd book and it is difficult to discern its target market given the high price for a slimmish volume. It is certainly not a business nor yet an industrial history. It is a *mélange* of recipes, though there is no guarantee they are worth making, and incidents from the history of the production and uses of sweets and cocoa mostly derived from contemporary sources with little commentary on their accuracy or representativeness, virtually no analysis, few statistics and no obvious thesis.

It claims to be a history of the industry from the earliest civilisations of Egypt, Greece and Rome through to our own time, and certainly there are some interesting passages on the development of the West Indies using slave labour on the sugar plantations, the early coffee and cocoa houses in London, and brief histories of famous names in the industry such as Fry, Terry, Cadbury, Rowntree and Nestlé. However it is exasperating in its lack of system for instance the chronology leaps about, on one page we move from seventeenth-century chocolate houses to 1930s advertising, and it is often poor history, with chocolate as a 'staple' of eighteenth-century English breakfasts (p.77) and his method of converting historical prices into current values is inconsistent and highly suspect.

The publishers, too, must take a share of the criticism, for it is unprofessionally produced. There is a large number of typographical errors (not that unusual nowadays, but when words basic to the industry such as Bournville and Clarnico are repeatedly misspelt one begins to doubt random errors), eccentric over-use of capitalisation, an idiosyncratic method of citing sources (neither Oxford nor Harvard), no running chapter headings, illustrations without captions, unnumbered, and with no listing at either the beginning or end of the book, a strange use of tenses, especially a profusion of unrequired conditionals, an absence of the apostrophe s, and pages of advertisements – unrelated to the text, interspersed at random in the body of the work.

Can anything good be said for it? If you collect old sweet and chocolate recipes or are fascinated by the extravagant claims made for these products in the past; if you delight in the more esoteric trivia of the industry – for instance that Mars first launched Maltesers in the 1930s under the name 'Energy Balls', the precise ingredients in a pine comfit or the method of producing 'pièces montées' – then this book is for you. For the business historian it might act as a source of facts and opinions on the raw materials, products, and players in the industry and as such may be of some use. It covers too long a time period, is anecdotal, unsystematic, and uncritical of the sources and thus makes poor history.

Ealing College JOHN ARMSTRONG

HANS POHL, *Die Einflusse der Motorisierung auf das Verkehrswesen von 1886 bis 1986* (Stuttgart: Steiner, 1988. Pp.ix + 216. DM52).

This book, which is a collection of essays produced for the 1986 symposium of the West German Society for Enterprise History, focuses less on historical research than on current policy problems and their recent past.

The book opens with an essay by Hans Pohl which provides a brief overview of transportation history in the main industrial countries, since the advent of the railways. It traces the shifting importance of different transport forms for passenger and freight traffic, paying attention to the contrasts in timing of these shifts between countries. Rainer Willeke, a transport economist, drawing primarily on German data, then examines the positive role of motor cars in modern economies both as a demand factor and as centre of the transportation system. There follows a survey of the implications of changing automobile production methods for the labour force in West Germany by the sociologist, Fredrich Furstenburg. Volker Hentschel's paper provides a comparative analysis of state regulation of rail and road transport in Germany, France, Great Britain and the USA since 1870. Although critical of some of the standard theoretical justifications of state intervention, Hentschel, in contrast to most of the other contributions, does point out that 'market failure' did and does exist. Contributions by Braunschweig, a Swiss journalist, by Warnecke, an engineer, by Borscheid, an economic historian, and Sabel, an industrial economist, follow. Braunschweig is mainly concerned with what he perceives to have been a marked shift in public opinion, throughout the industrialised world, against the motor car since the 1970s. I have several doubts, however. Firstly, I am not convinced by the evidence, nor is it clear what caused the presumed shift. To what extent, for example, was it an élite minority mobilising against the extension of the freedom associated with motor cars to the entire population? In the next contribution Warnecke discusses production technology in the motor car industry and the possibility of further automation by robots. He argues that technical progress necessarily involves co-operation between management and labour, but that such arrangements can entail high costs in terms of loss of markets. Peter Borscheid's stimulating essay on the automobile as a vehicle of individual freedom provides a number of useful quantitative indices of 'mass automobilisation' mainly for West Germany. Of particular interest are his comments on the effects of 'automobilisation' on residential spatial patterns and on individual time budgets. Herman Sabel's concluding paper takes up the very interesting topic of 'high and low points' in the enterprise history of the automobile industry. Drawing on a wide secondary literature and a large number of automobile firms throughout the world, he attempts to discover why some firms survived and most disappeared. The answer, he believes, is in the success of the products. He thus focuses on some 1,665 products showing that there were 12 distinct causes of product death and that the reasons why products disappeared varied across countries and time. Unfortunately the results are rather disappointing. His formulations strike me as tautological. For example, 'whether a firm survives or dies depends on whether or not it possesses the correct internal and external framework' (p.190). What is 'correct' is however not defined independently of *ex post* survival or death. The book ends with a general discussion on contemporary competition and deregulation within the transport system in Europe, especially the German Federal Republic.

From the standpoint of business history, it is disappointing that there was no discussion of sources or the related problems of reconstructing the history of the automobile industry. In addition little light is shed on early technological or organisational innovations, despite a rich literature on the latter. Similarly, there is nothing on the link between finance and mass production. Nevertheless, the book does offer some compensation for such lacunae, since the subjects it covers are relevant to the history of transportation enterprise; in any event the book aimed to examine transportation generally rather than to conduct a dialogue with business historians.

University of Münster RICHARD TILLY

RAYMOND G. STOKES, *Divide and Prosper: The Heirs of I.G. Farben Under Allied Authority, 1945–1951* (Berkeley: University of California Press, 1988. Pp.xiv + 290. $40.00).

One of the most remarkable aspects of the German 'Economic Miracle' in the 1950s was the extraordinary recovery of Germany's chemical industry, which grew almost fivefold in 10 years. The achievement has to be set against a background of wartime destruction, postwar production prohibitions, and the Allied decision to break up I.G. Farben into a number of smaller combinations. By the 1960s each of the now-separate parts of the old chemical empire was larger than the parent business in 1945. Raymond Stokes has set out to explain why. He has produced a workmanlike survey from a good range of primary evidence, mainly for the western zones, and suggests some clear conclusions. At the end of the war the separate zones of occupied Germany each had a number of I.G. Farben plants. While these continued to function at a fraction of capacity, producing only what the Allies had not outlawed, the occupying forces argued about what to do with the German chemical industry. This gave the businesses a breathing-space, allowing repair and rebuilding, and the re-establishment of a core of skilled personnel. In 1946 the Allies decided on 'deconcentration', splitting the firm up into separate units, something, as Stokes points out, that matched German reservations about the unwieldy character of the old trust. The Americans favoured complete de-centralisation to the level of individual plants to discourage further cartelisation; the British preferred to maintain a larger unit, in case it could be nationalised; the French hovered uncertainly between de-centralisation and *planisme*. The British view prevailed on ground of expedience. The Americans and the French wanted to encourage industrial output and recovery in their own zones, and so had to accept the integration of chemical plants on technical, productive grounds.

Stokes shows that, all through these arguments, the German managers steadily concentrated on reconstructing the industry and re-establishing trading links in any direction that Allied policy would permit. It was the Allied decision to put an end to any return to Nazi autarky and cartelisation that encouraged them to push the German industry into exporting – exactly what it preferred to do – and to build up healthy competing production blocs in each zone, backed with American money, which formed the core of what became BASF, Bayer and Hoechst in 1952. The stabilisation of the West German currency in 1948, and the gradual removal of product and trademark restrictions, all vigorously lobbied for by German managers, completed the Western assistance. By then the world economy could not do without German products, and the West could not do without a reviving West German economy. The successful re-establishment of a chemical industry symbolised the ambiguities that underlay occupation policies: anxious not to allow Germany to return to the economic system of the 1930s, worried by Communist power in eastern

Europe, the Western Allies provided just the conditions that permitted rapid re-integration into the world economy, and rapid domestic revival. The rest is history.

This is an intelligent and thoughtful explanation. Stokes argues that the continuity of personnel, at senior and middle management level, was the residual factor. His text, however, shows how much revival depended on Allied dithering, and how much on sheer good fortune, the revival of the postwar European economy and the rapid expansion of chemicals not just in Germany, but all over the world. If the argument here has a weakness, it lies in the failure to discuss the revival comparatively, to look more closely at the technical and sales performance of an industry forced to compete with its privileged western rivals. A more detailed discussion of the product strategies, research and development and commercial practices would illuminate a great deal about German competitiveness. Technical and commercial explanations were arguably as important as the political economy which Stokes deals with here. If, in the end, personnel counts, we need to know what choices were made, and what skills it had. One skill Stokes has in abundance: the ability to weave his way through the debilitating welter of acronyms that the occupying powers spawned. The text is sprinkled with an Orwellian harvest of them: OMGUS, FARDIP, BIPCO, TRIPCOG, COIG. De-regulation must have been a great relief to everyone.

King's College, London R.J. OVERY

PHILIP BENEDICT (ed.), *Cities and Social Change in Early Modern France* (London: Unwin Hyman, 1989. Pp.xiii + 251. £30).

The introduction and overview by the editor, Philip Benedict, place this collection of essays in the context of the developing field of French urban studies of the early modern period. As shown by the select bibliography, both French and foreign scholars have made notable contributions but there are still many gaps and methodological problems and the boundaries of the subject appear to be ill-defined. The economic and business historian may well find that they are not asking of the material the kind of questions to which they would like answers. The studies in this volume take as their main source material tax returns and notarial records and concern Paris, four provincial towns and the small towns of Dauphiné. Three are by French-speaking scholars (and are translated by the editor), the others holding posts at American universities, where a surprising amount of research on French history is carried on these days. As is appropriate, the first essay, by Robert Descimon, deals with the capital, examining its social geography and the distribution of wealth in the light of the tax rolls drawn up on the occasion of the 'free gift' to the Crown of 1571. He shows that there was a growing divergence between the residential choices of the mercantile élite and the growing number of royal officials, while new fashionable quarters were developed just inside or outside the city walls away from the more ancient parts of the city where merchants and artisans were crowded together.

Montpellier, as Frederick M. Irvine shows, lost its once valuable trade to the Levant and became, in the sixteenth century, more of an administrative centre, with the robe nobility taking over political power from what he calls the 'bourgeoisie'. The lack of clear definitions of class or of different classes appears to be a weakness of all the contributions.

In the case of Dijon (which might be called the mustard capital of the world), the study by James R. Farr spans three centuries, focusing on changes in the social and economic structure. The evidence comes mainly from tax rolls and indicates an increase in the number of royal officials and men of law, while there was a decline in the agricultural population and a re-structuring of local industry coincident with a shift in demand towards luxury items. There are also some interesting findings on the position of women.

Claire Dolan's contribution looks mainly at the artisans of Aix-en-Province, concentrating this time on a short period, 1557 to 1575, using such notarial records as marriage contracts to good effect. The study reveals significant differences in marriage patterns between different groups of artisans (related to their trade), as well as their location and distribution within the city.

Toulouse, another southern city, shows a complex and changing social pattern over the period 1500 to 1789 examined by Robert A. Schneider. The steady progress of royal state-building undermined, but did not entirely supersede, the traditional governing body of the city, the *capitoulat*. Not only did the latter fight hard to defend its privileges from royal encroachment, but the Crown was also obliged to depend upon it as a counterweight to feudal lords, clerics and judicial bodies, above all the Parlement; a not unfamiliar story. This was especially so in times of crisis, but Toulouse also had a robust economy based upon the production of dye (pastel) for the textile industry. Many institutions and practices thus survived until the Revolution.

The diversity to be found among the small towns that dotted the landscape of eighteenth century Dauphiné is well brought out in René Favier's essay. While some stagnated or declined, others, thanks to geographical position and industrial potential, were able to flourish in what was, at that time, a leading industrial area. Thus, while, as a whole, 'the rhythms of agriculture still governed the life of most of Dauphiné's small towns' some were already predominantly industrial in character. More work evidently needs to be done, in this and other areas, on the connection between the spread of industry to the countryside (the term 'proto-industrialisation' is evidently not in favour with urban historians) and urban change in the pre-industrial period.

Useful and scholarly as these essays are, they are likely to leave the economic or business historian asking many questions which the authors do not pose. Besides looking for more explanation of economic change and growth (emphasised by some French economic historians), there are social questions such as language, literacy, religion and education which receive hardly a mention. Nevertheless, this volume is an excellent introduction to a fascinating field of research and assist comprehension with a number of useful maps.

Gravesend TOM KEMP

HANS POHL, *The Concentration Process in the Entrepreneurial Economy since the Late Nineteenth Century*: lectures held on the 9th International Congress of Economic History in Berne on August 28, 1986; Zeitshrift für Unternehmensgeschichte, Beheit 55 (Stuttgart: Franz Steiner Verl, 1988. Pp.146. DM58).

Each of five essays focuses on national developments. Wohlert's detailed analysis of concentration in Sweden before 1914 examines the process sector by sector, offering particular explanations in each case. A removal of mercantilist restrictions in the 1890s, culminating in change in company law in 1897, brought above a wave of cartel and trust agreements to which bankers, for whom it was illegal to hold industrial shares, contributed through holding companies. Wohlert also emphasizes the personal connections between Sweden's major companies, in part a reflection of a compact business society, the relatively small size of the home market, and the tendency for entrepreneurs to resort to formal agreements in response to foreign competition, both at home and in overseas markets. His observation that 'the process of concentration intrinsically bears the embryo of decentralization' (p.47) is echoed in Morikawa's lecture on Japan, which examines the multi-industrial concentration within Mitsui and Mitsubishi, the two largest *zaibatsu* before 1914. Early entry into an industry is seen as one of the important factors explaining the Japanese pattern, as was the tendency for Mitsui and Mitsubishi, in competition with each other, to achieve concentration through mergers combined with a systematic pursuit of market advantage by developing technology and nurturing management skills. Reviewing the period to the 1930s, which saw the two *zaibatsu* cooperating to avoid mutually damaging price competition during depression, Morikawa notes that the degree of concentration was constantly changing and 'was never a one-way tendency' (p.66).

In Germany the process continued, though at varying pace, throughout prosperity and depression, encouraged by 'cartel friendly courts' in a context before 1914 of minimal government restraints on trade. Political considerations led to an extension of concentration during the war, while the ensuing depression led government to emphasise national economic as well as the political advantages. In the 1930s the National Socialists' policy included the promotion of business concentration through fiscal incentives and economic manipulation. The role of the banks in the process was important from the 1890s onwards, more so, however, in heavy industry, and even there, Feldenkirchen argues, the extent of banking intervention in the business policies of industrial firms has been exaggerated.

Neither government nor financiers played more than a minimal role in the growth of large firms in France, where before the 1960s industrial concentration was very low by international standards. Daviet's lecture, therefore, is concerned to offer reasons for the lag – for by the 1970s the one hundred largest industrial firms produced roughly 40 per cent of French industrial output. He adduces as contributory factors market structure and consumption patterns, myopic entrepreneurs and particularly engineers who dominated hierarchically organised firms, together with a prevailing commercial ethos averse to profit maximisation. Daviet argues that the Rome Treaty, by opening up the economy to competition, led to a transformation of business and public prejudices against big business.

A comparable suspicion of trusts and giant firms in general was present in the United States in the 1880s, the critical decade when transportation and communications infrastructure reached a stage of development when the commercial potential for exploiting mass processing technology and associated scale economies combined to bring about high levels of concentration. The effect of anti-trust legislation, however, was to limit collusion in restraint of trade rather than to check the growth in concentration *per se*.

The five lectures differ in approach and level of analysis; Wohlert and Feldenkirchen's contributions, for example, are based on wide-ranging secondary sources and some archival research, whereas Tedlow's contribution is heavily dependent on Chandler, Nevins and Adam Smith. Pohl's brief introduction raises questions of concepts and measurement relevant to international and chronological comparisons; however, there is little indication either that the contributors took these as common points of departure or that in preparing his introduction the editor built on the lectures and discussions held in Berne in 1986. As a result this collection represents a missed opportunity to provide what might have been a valuable, comparative review of the history of industrial concentration.

University of East Anglia ROY CHURCH

DICK GEARY (ed.), *Labour and Socialist Movements in Europe before 1914* (Oxford: Berg, 1989. Pp.278. £25.00).

The revolutions of 1848 saw the appearance of socialist movements in many parts of Europe. By 1914 there were significant socialist parties within the empires of Germany, Austro-Hungary, Britain and Russia. Yet the outbreak of war saw the collapse of the International as patriotic and nationalist forces swept the continent. Even the German SPD fell into line behind the Wilhelmine state. The situation in non-combatant countries such as Spain was hardly better, as socialists were marginalised and the revolutionary syndicalists of Catalonia captured the leadership of the revolutionary movements. The authors assembled by Dick Geary seek to explain the rise and the flaws of socialist politics in Europe. Most of the essays do this by examining three critical factors: the industrialisation of the European economies and the rise of an urban working class; the policies pursued by the state in each country; and the existence or strategies of socialist parties within the European societies.

The rather pedestrian essay by Gordon Phillips surveys Britain in the nineteenth century and concludes that the natural skills and conditions of the industrial workforce were so diverse that the scope for collective action was always restricted. This approach seems to miss the point made so well in Roger Magraw's interesting study of French socialism and society: that political and institutional reforms could take place before industrialisation had made its impact. The question is not the coherence or homogeneity of the workforce but the extent to which social groups could use their different resources to form a coalition to advance their position. France's economy and its class society remained very different from that of Britain up to 1914, but there were clear parallels in the policies pursued by employers and unions as well as the innovations of the two states.

Socialists from Marx to Lenin recognised the seminal role of the industrial workforce but could not provide a sustained strategy for the unions. The militant French unionists are often contrasted with passive British 'Labourists' but Basly was to adopt similar policies to those of Robert Knight in the 1890s. In Germany the contact between intellectual socialists and labour associations was much more fruitful than in Britain or Spain, but European socialists had remarkably little to say about the future of production under common ownership. This omission helps to explain the dramatic impact of syndicalist ideas in the decade before 1914 in very different parts of Europe. Socialists seem to have been more successful in dealing with the politics of consumption before 1914.

Where the state had secured an historical role as the provider of basic sevices, socialist parties in Germany, Britain and France argued that the government had a responsibility to improve urban conditions. Not only was municipal socialism a feature of the campaigns of the 1890s, but the great capitals of Europe could claim to be strongholds of urban socialism. Their difficulty was to distinguish socialism construction from bourgeois reformism as welfare legislation was enacted. Even the 'minimal programme' of the Italian socialists began with basic constitutional reforms. The appeal of such 'consumer socialism' was greatest where a recognised role was accorded to the state, as German socialists struggled to define the limits of state reconstruction. In Italy, Spain and Russia the absence of popular support for state agencies helped the spread of revolutionary politics designed to overthrow the state itself.

These essays emphasise the importance of political institutions in shaping the varieties of European socialism before 1914, though they omit the vital contribution of Austria–Hungary. The studies reveal the continuing importance of regional, confessional and occupational divisions within each society. Leading socialists often ignored these facts of life in seeking to import the ideas, practices and political models of other societies in their struggle for socialism. Perhaps their greatest difficulty was in responding to the drive for state modernisation that other parties engineered. The overthrow of decadent regimes and the regeneration of the nation were lines from a shared discourse of nationalists, republicans and socialists. In this sense European socialism was always a collection of 'socialisms in one country', as the leaders sought to address the problems of their own society. Such a reading of the diversity of socialist loyalties helps to explain the passage of Mussolini from flamboyant revolutionary to successful Fascist as the European states slid into turmoil after 1914.

University of Exeter JOSEPH MELLING

WALTER LIPGENS (ed.), *Documents on the History of European Integration: Volume I, Continental Plans for European Union, 1939–1945* (Berlin and New York: de Gruyter, 1985. Pp.xxiii + 823; microfiche enclosures. DM296.00).

This is the first of a four-volume collection of documents on the history of the movement for European integration between 1939 and 1950. 250 documents are assembled, taken from ten continental European countries; all are translated into excellent English with the originals being available on microfiche in a separate envelope. The entire collection forms part of a series of studies on western Europe produced by the European University Institute in Florence.

The stated objective of this collection of documents is to demonstrate that the process of integration in western Europe was not merely a consequence of the Cold War but was a positive attempt by the European countries themselves to solve national and international problems. The first volume deals with those ideas about European unification which were circulating in continental

Europe between 1939 and 1945. Divided into three parts the book covers the fascist idea, that of the non-communist resistance movement and that of neutral countries in Europe. However, there is no attempt to define what is meant by Europe and terms such as 'integration', 'union' or 'federation' are used interchangeably. No justification for the selection of countries is offered nor is their relative importance to the subsequent course of European integration discussed. Countries are simply presented in chronological order as follows: Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Poland, Sweden and Switzerland. With most of the book devoted to the ideas of the non-communist resistance groups the implicit assumption is that their ideas played a crucial part in reshaping Europe after the war.

The fascist motivation for uniting Europe is seen as being primarily economic and receiving the strongest backing from industrial managers. The argument was that a larger integrated market would lead to higher living standards in the more developed European economies. But the motives of the non-communist resistance groups are seen as being largely ideological, based on common values rather than common interests. These values rested on a respect for the dignity of the individual and a desire to protect him from the power of the nation state. Nationalism itself was seen as a substitute for religion but whereas Christianity had united people in Europe, nationalism had produced imperialism, fascism and war. It was thus the interwar system, based on giving full sovereignty to the nation state, which was held to be directly responsible for the Second World War. This system was to be replaced by one in which the power of the national state would be checked by the creation of a supranational European state on the one hand and local self government on the other. The initial failure of these plans was attributed to the opposition of the super-powers to any regional union.

The selectors of documents for individual countries have, with varying degrees of success, unearthed evidence taken from the writings of politicians and intellectuals to support these arguments, although in the case of the smaller countries this proved to be extremely difficult. However, one must question the approach to the writing of history adopted in this volume. It is clear from the introductions to chapters and from what is known more generally about the resistance in Europe, that the main purpose of national resistance movements was national liberation not European integration. The Second World War strengthened nationalism rather than the reverse. Therefore to base a book on an idea which is itself rather marginal, even though evidence can be found to support it, leads to confusion rather than enlightenment.

Thus while the authors have carried out a valuable job in unearthing and assembling material, its real relevance might have been more apparent had it been located in its national political and economic context rather than related to the then very vague notion of 'Europe'.

University of Manchester FRANCES M. B. LYNCH

WALTER LIPGENS (ed.), *Documents on the History of European Integration: Volume 2: Plans for European Union in Great Britain and in Exile, 1939–1945* (Berlin and New York: Walter de Gruyter, European University Institute, Series B, 1986. Pp.xxiv + 847. DM324).

This book was published in 1986 (in Germany but is produced in English) as part of a series and has not been widely reviewed. The absence of publicity and critical notice does scant service to an impressive enterprise. The volume collects almost 300 extracts or full documents written during the last war by British authors and those exiled from occupied and Axis countries on the theme of European federation. Archives and documentary collections from Europe, Africa and the Americas have been consulted; the effort has been prodigious. This is obviously a vital source for those interested in European integration, but there is also much of interest to political, diplomatic, economic, labour and cultural historians. In addition to British authors, there are pieces by exiles from France, Belgium, the Netherlands, Denmark, the smaller nations of Eastern Europe, Italy, Germany, Austria and a number of 'transnational' groupings (organised largely by the Church or by socialist institutions). Among those involved were William Beveridge, Ivor Jennings, Harold Wilson, Lionel Robbins, James Meade, F.A. von Hayek, Jean Monnet, Raymond Aron, Feliks Gross, Willi Brandt and Bruno Kreisky.

The volume has a general introduction by Lipgens setting the scene and the broader diplomatic and political context. The remainder of the book is divided into three parts; the views respectively of the British, exiled national groups and individuals and 'transnational' bodies. Each part consists of specific chapters, each having its own introduction by one of the team of fourteen editors. One of the delights is the high standard of scholarship; biographical and bibliographical details are extensive, cross referencing is more than adequate and corners have not been cut to save costs.

One of the highlights of the volume is the quality of the debates in 1940–41 organised by the Federal Union Research Institute anticipating matters of great current interest such as monetary union, the single market and the tensions between federal and national policy priorities (though in 1940–41, the economic liberals insisted upon primacy to supra-national policies and the social democrats held out for more nationalistic goals). Also remarkable is the common pattern to the debate. During the 'phoney war' a naive idealism prevailed, with contributors in a variety of countries holding the view that national sovereignty *must* be restricted, but analysis of the real world was conspicuous by its absence. Once the German conquest of western Europe had been accomplished, more detailed blueprints were drawn up with impressive if still somewhat abstract explorations of constitutional, philosophical and policy issues. Attention finally shifted to concrete needs (a communications network, massive infrastructural development and financial assistance) as victory came closer. Nevertheless, it is also very clear that there were deep divisions within the federalist ideal. The Dutch feared domination by the French, the French feared domination by the Germans, the Slav and Balkan groups feared domination by the Russians, and the British were increasingly drawn towards an 'Atlanticist' and away from a European federal perspective. Given this potential for serious disagreement, it is surprising that European union has made the progress it has since 1945 and not the least achievement of this volume is to emphasise how little co-operation had existed before 1939.

University of Exeter ALAN BOOTH

WALTER LIPGENS and WILFRIED LOTH (eds.), *Documents on the History of European Integration: Volume 3, The Struggle for European Union by Political Parties and Pressure Groups in Western European Countries, 1945–1950* (Berlin and New York: de Gruyter, 1988. Pp.xxii + 849; microfiche enclosures. DM345.00).

This is the third of a four-volume collection of documents on the rise of the movement for European integration, the earlier two having concerned themselves with plans mooted in 1939–1945 on the continent and in Britain (including the exile governments) respectively. There are 252 documents presented, grouped by the nine countries of the EC of 1985 (except Luxembourg), and all translated into excellent English, the originals being made available on microfiche in a separate envelope. Produced by the European University Institute in Florence, financed by the Volkswagen foundation, even the framework within which the multinational group of editors operated, has a 'European' flavour.

However, what 'Europe' consists of and what integration is intended to mean, remains unclear. In part, this arises from the subject matter itself, since the protagonists at the time had varying and differing hopes and ambitions within the shifting political realities of the day. At first, the 'third force' idea held sway – possibly exaggerated in significance in these pages – of a Europe that would hold the balance between the two super-powers; then there came the split as a result of the Cold War, leading to a western orientation; there arose the French dream of hegemony, receiving some aid from the British dislike of a close involvement with the continent; and finally, we have the shrinkage of the concept to the dimensions of the Schuman plan. All this, at one time or other, was 'Europe'. Beside the numerous forms of political and military union that were discussed, there were also the economically integrating institutions of the Marshall Plan and OEEC, and, once again, the Coal and Steel Community. All this might be termed 'integration'.

The selectors of the documents for the individual countries have kept to a fairly uniform plan. Included are the speeches and articles of idealists, the responses of the politicians and the harder statements from the diplomats. Apart from the Council of Europe and the somewhat nebulous European Parliament, these years saw hopes rather than fulfilments, so that the predominance of the idealists in these pages is fully justified. The politicians thought much harder about practical problems and were inclined to ask searching questions about the finer details.

In the immediate postwar years, Britain still carried a great deal of weight, and the other western Europeans were prepared to go to considerable lengths to keep her in the circle, almost falling between various stools in the attempt to do so. Only de Gaulle and the more nationalistic French representatives saw in the absence of their British neighbour, and in the political weakness of Germany which would allow France to keep hold of her access to German coal, a chance to build up a position of French leadership in Europe, whatever that might mean in practice. Britain's half-heartedness about 'Europe' had many roots, not least the fear of the Labour Party of joining a conservative, less socially responsible continent that would needlessly diminish British sovereignty. Clearly, the lessons of the war regarding the fluidity of frontiers and the human cost of nationalism had been brought home far less insistently to the British than to the other Europeans. Moreover, their hopes were centred, as were their traditions and their interests, much more on the world organisations, such as the United Nations and its subsidiary bodies, the IMF and the World Bank, than on the confused and discordant voices which emerged out of the wreckage of the Continent.

This is, on the whole, an excellent selection out of the welter of available material, some of it culled from sources difficult of access, by people who have intimate knowledge of their place and time. One would wish only that a clearer order had been imposed to separate out the many parallel as well as incompatible strands in the postwar groping for some form of European integration.

Bielefeld University SIDNEY POLLARD

DIANE ELSON and RUTH PEARSON (eds.), *Women's Employment and Multinationals in Europe* (London: Macmillan Press, 1989. Pp.xiv + 227. £12.95).

This collection of essays makes a valuable contribution to the literature on the nature of women's work, the gender division of labour and the proliferating activities of multinational companies. The essays focus on firms in the electronics, clothing and textile industries which typically employ substantial numbers of women. While they aim to highlight the contrast between the internationalisation of the operations of multinational companies and the localisaton of women's lives this is achieved only indirectly. What emerges most clearly is the companies' ruthless exploitation of female labour and the volatility of their investment practices. These features are revealed most vividly in Pearson's sound but statistically dense analysis of multinationals located in the UK, in Jackson and Barry's poorly structured, yet interesting, account of the impact of multinationals on the Irish economy and in Elson's useful pan-European study. The disposability of female labour in periods of organisational and technical change is reflected in Pearson's work; and as Gensior and Schöler's scholarly chapter shows, women tend to be most numerous in areas of employment that are declining, and under-represented in expanding occupations.

While there is no doubt that multinational companies make extensive use of cheap and amenable female labour in many of their operations world-wide, they are also influenced by market potential and by financial incentives. Multinationals were attracted to Silicon Glen, for example, by development grants and appropriate local labour (Goldstein); and to Ireland by grants, cheap labour, free access to the European market and exceptionally high profit levels (Jackson and Barry).

The chapters confirm well established features of women's employment (cheap, disposable, low skilled and low status), and well known attitudes towards women workers (as compliant, patient, diligent and nimble fingered), with little attempt at explanation. Hirata's comparative analysis of the gender division of labour in France and Brazil is an exception, however, and reasons for women's long-standing subordination are suggested. Some authors reverse traditionally held notions; and research by Aydin and Lenz on German and Turkish workers in Ulm and by Findlay on Plessey's Bathgate factory reveal a high degree of militancy and solidarity among women in their resistance to plant closure. Harris's fascinating account of women workers in County Mayo interprets their apparent acceptance of exploitation by multinational companies not as weakness but as entirely justifiable given the dearth of local opportunities.

The morals of multinational companies are also inspected by the contributors to this volume, and while indirect evidence indicates that as employers they are reasonably generous (as they can well afford to be), several authors are critical of their behaviour and suggest improvements. Structural and attitudinal barriers to women's advancement at BP were uncovered by Davidson who reveals that her proposals for change at the company are being at least partially implemented. Elson and Pearson itemise a more general agenda for reform and argue that it is the duty of multinational companies to exhibit greater concern for the community in which they choose to operate.

A wealth of information is assembled in this volume, but its presentation is sometimes stodgy. The work is generally long on description and prescription and short on explanation. Historical context, where reasons for women's notoriously shoddy treatment by capitalists in all kinds of settings may well be located, is sadly lacking except in Harris's piece. The quality of the contributions, while variable, is generally very high. The chapters integrate reasonably well and there is surprisingly little overlap. Business historians of the postwar period will find much of interest in this important compilation of up-to-date research on the subject of women's work and the international division of labour.

University of Leeds KATRINA HONEYMAN

J.H. GALLOWAY, *The Sugar Cane Industry: An Historial Geography from its Origins to 1914*, Cambridge Studies in Historical Geography No. 12 (Cambridge: Cambridge University Press, 1989. Pp.xiii + 266; illus.; maps. £30.00 ($44.50).

The literature on the development of the sugar industry has been spread over a diverse range of journals with few recent attempts to collect the different strands of research together in book form. This is the first in-depth study of the development of the sugar industry in many years. The subject is extensive and Galloway has wisely concentrated upon just one major aspect, namely the sugar cane industry. The discussion is confined to production and covers the development of cultivation, processing, innovation and the impact upon international labour migration.

The book is divided into three distinct parts. The first provides a contextual introduction to the issues, a discussion of the technical aspects of production and a historical investigation of the origins of cane sugar, its cultivation and processing. The second section surveys the developments in the sugar industry in the Western hemisphere from c.700 to 1914, the major part being devoted to innovation and geographical changes in the nineteenth century. Developments in the Eastern hemisphere from c. 1750 are reviewed in the third.

Galloway's prime intention is to illustrate the important role played by the cane sugar industry, particularly since 1750, in determining patterns of land-use and labour migration throughout much of the tropical world. A substantial body of information, drawn from a wide variety of English and non-English language sources, has been marshalled in support and demonstrates Galloway's extensive geographical and historical knowledge of the industry's development.

The concerns of the historical geographer and the business historian, however, do not always coincide. Galloway appears ill at ease with economic concepts which, necessarily, underpin some of the subject matter. There is little explicit discussion of the effect of slavery and indenture on substitution decisions between capital and labour on plantations or of the impact of changes in technology on plantation scale economies, costs and prices. The latter gives rise to an apparent negative elasticity of supply by confusing static and dynamic consumption effects; 'The expansion of the industry was the result of the continuing rise in the demand for sugar, a demand that was in turn stimulated by the decline in the price' (p. 84).

My principal reservations about *The Sugar Cane Industry* are those of methodology and style. The introduction provides few parameters with which to assess the arguments as opposed to the evidence. Colonialism by consuming countries as the key determinant of crop choice, land tenure system and labour migration – including slavery and indenture, in many producing countries seems to be the only dynamic paradigm. The emphasis on production, however, means that consumption is treated exogenously despite being intrinsic to the central thesis. There is little substantive economic and statistical analysis, the discussion being essentially descriptive and relying primarily upon written sources. Galloway raises several issues which deserved less cursory treatment; for example, the simultaneous decline of slavery and the emergence of sugar beet as a cane substitute. Although very readable, the style is discursive and prone to digression and this obscures the logic of the arguments being proposed. The book suffers from a poor focus and this leads it to be less than the sum of its parts. A firmer editorial hand and a more lucid presentation would have produced a book well worth recommending to several disciplines as a key source on sugar. The book therefore falls short of its objective to fill the gap in the literature singlehandedly. Nevertheless, there is much that will be of interest to the business historian; plantation practices, investment decisions, commercial policy, the slave trade, labour migration and technological innovation and diffusion.

Lancaster University ROBERT READ

MICHAEL D. BORDO (ed.), *Money, History and International Finance: Essays in Honor of Anna J. Schwartz* (Chicago: The University of Chicago Press, 1989. Pp. 272. $35.00).

This is the report of a conference held in October 1987 by the National Bureau of Economic Research to consider and celebrate the work of Anna Schwartz. The major part of the book is made up of five long papers, with their accompanying comments and discussion. The first, by Michael D. Bordo, considers 'The Contribution of *A Monetary History of the United States, 1867–1960* to Monetary History', which is primarily a very useful overview of the main themes of that book and the way subsequent scholarship has treated them. This is followed by Forrest H. Capie and Geoffrey E. Wood's 'Anna Schwartz's Perspective on British Economic History', in which they consider the influence of her *Growth and Fluctuations of the British Economy, 1790–1850*, concluding that the book 'remains unchallenged as a source of carefully constructed data for the years it covers' (p.90). The third paper, by Phillip Cagan, is 'Money-Income Causality – A Critical Review of the Literature Since *A Monetary History*'. This provides good spectator sport for the reader, as he attacks time-series regression – 'historical analysis relies on scholarship – a word on the way to losing its meaning in economics. It contrasts with the now common practice of gathering a handful of time-series from a data bank and running them through a regression meat grinder' (p.118) – and he questions in particular the trustworthiness of vector autoregression (Robert H. Rasche makes a valiant response). The fourth paper is on 'Stability Under the Gold Standard in Practice' by Allan H. Meltzer and Saranna Robinson. After analysing data from seven countries covering the periods 1897–1913, 1950–72 and 1973–85, they conclude, first, that 'short- or long-term anticipations about prices and output were less stable under the gold standard than under the monetary arrangements of the past thirty-five years' and second, that 'a fluctuating exchange rate regime does not impose greater uncertainty and instability' (p.192). The fifth paper, by Michael R. Darby and James R. Lothian, is on 'The International Transmissions of Inflation Afloat'. Their principal finding is that 'flexible exchange rates have indeed been accompanied by greater long-run monetary policy independence', based on a sample of 20 OECD countries.

The final, short, section of the book contains two appreciations of Anna Schwartz, one on her scholarship by Karl Brunner and one on the virtues of collaborating with her by Milton Friedman ('From my point of view, it was an almost perfect example of collaboration. Anna did all the work and I got a lot of the credit' – p.247). In this book Schwartz receives an abundance of credit, and the gift of some very interesting papers which most monetary historians will profit from reading. (So will business historians, although non-econometricians will find half of it hard going.)

Imperial College, London KATHLEEN BURK

MIRA WILKINS, *The History of Foreign Investment in the United States to 1914* (Cambridge and London: Harvard University Press, 1989. Pp.xxiii + 1055. £51.95).

This volume of 625 pages of text and 312 pages of endnotes is the most comprehensive study ever written of foreign investment in the United States from 1607 to 1914. Beginning with the early British chartered companies, the Virginia Company and the Plymouth Company, Wilkins follows the course of foreign investment through the eighteenth and nineteenth centuries, with her major focus on the 1875 and 1914 period, when the United States emerged as the world's largest debtor nation. Although Wilkins is well known as the leading authority on the history of multinationals, here she covers both portfolio and direct investment into the United States, making the important point that, although these two forms of investment are conceptually quite different, in reality the borders between them were often indistinct. For the post-1875 period, Wilkins proceeds economic sector by sector, almost company by company, synthesising old evidence and presenting her own original research on foreign influence. The level of detail, and the thoroughness with which sources have been uncovered and checked, makes this study one of the most distinguished works of historical scholarship published over the last decade. It is also a landmark event in the vibrant and burgeoning literature on the history of international business.

Wilkins makes major contributions in a number of areas. American economic historians have largely lost sight of the importance of the foreign contribution to the economic growth of the United States before 1914. Wilkins puts foreign investment back on the agenda. After 1776 the United States had political independence, she writes, 'but, paradoxically, more economic dependence' (p.28). There was a surge of foreign portfolio investment into the new nation, and crucial events in its growth – such as the Louisiana Purchase of 1803 – were financed by government borrowing from abroad. Foreign investment in American banks and insurance companies 'assisted in providing infrastructure for the new nation' (p.47). In 1811, just before the outbreak of war between Britain and the United States, 70 per cent of the shareholders of the Bank of the United States were foreign, principally British.

In the late nineteenth century Wilkins demonstrates that inward direct investment played a vital role in the growth of many American industries. 'From soap to crucible steel to optical products, foreign multinationals were present' (p.622). Electricals, mining equipment, chemicals, rayon, alkali, dyestuffs, breweries – all these industries received large amounts of direct investment from abroad. This world has been forgotten by a generation of Americans obsessed with fears of a Japanese 'takeover' of their economy. Wilkins shows both that foreign participation in American industry is not new, and that it can also bring benefits. 'Foreign direct investors participated in an array of new American industries, introducing and applying advanced technology from abroad' (p.621). They very rarely broke American laws, or infringed sovereignty. Foreign investors are, in fact, a vital part of the explanation how the United States managed to become the world's leading industrial economy by 1914.

If Wilkins offers a major re-interpretation of American economic history, her book is also an important event in European, especially British, business history. Wilkins discusses the foreign investments of all nations, from Scotland to Bulgaria, in the United States. The United Kingdom gets premier attention because Britain was the largest and most sustained foreign investor in the United States. The large dimensions of Britain's portfolio lending to the United States have long been known, and Wilkins' contribution here is to show the extent of British direct investment in the nineteenth-century United States. Despite a generation of business history research, certain economic historians continue to maintain that British foreign investment in this period was overwhelmingly portfolio, risk averse and conservative. W.P. Kennedy's *Industrial Structure, Capital Markets and the Origin of British Economic Decline*, published as late as 1987, is one illustration. Wilkins provides a very different picture of Victorian foreign investment in the United States. Her British foreign investors exerted managerial control over investments, took risks, and sought entrepreneurial opportunities, and thereby contributed to American industrial growth. Some of the stories of early British multinational investment in the United States are already known: J. & P. Coats in cotton thread, Dunlop in tyres, Courtaulds in rayon, Shell in oil. Other stories, such as the substantial British role in building the new iron and steel industry of the American South, have never been previously explored.

Wilkins' major conceptual innovation in this book also concerns British foreign investment. She maintains that British direct investment in the United States was distinctive not only by virtue of its absolute size, but because of the peculiar institutional form it took. British direct investment was often carried out by 'free-standing companies', of whom there were 'literally thousands' (p.161). These companies were headquartered in Britain, but had no domestic operations there, and were designed to undertake business in the United States. They were thus different from 'classic' multinational companies, which typically grew out of an existing domestic operation. According to Wilkins, such 'free-standing companies' flourished in the 1875 to 1900 period, and then began to disappear, allegedly because of their fragile and undeveloped governance structures. More research needs to be undertaken on both the causes of this form of business enterprise (which seems to have been a device for internalising the market for capital) and for its subsequent disappearance (which is not fully documented in this book), but Wilkins has performed a major service in drawing attention to the diversity of institutional forms present in nineteenth century direct investment.

There are, perhaps, one or two aspects of the book which might be criticised. First, Wilkins confines herself to providing existing statistical data on the dimensions of foreign investment in the United States. Although the fragility of existing estimates of nineteenth century foreign investment is well known, Wilkins chooses not to enter this particular minefield. Given the problems of quantification of capital flows, she probably made the right decision, as the subject requires a book of its own. Meanwhile, her comments on existing data are far more helpful than is the norm. One table, giving estimates of the level of long-term foreign investment in the United States between 1875 and 1914, is accompanied by three and a half pages of detailed explanatory notes.

A second criticism concerns methodology. Wilkins, in this book as well as her earlier studies of the growth of American multinationals, deserves credit as one of the leading figures who have moved business history away from company case studies towards the study of themes using a range of corporate and other records. Over the last decade, however, business historians have moved on further, seeking to confront and/or incorporate economic concepts in their work. In a series of scholarly articles, Wilkins herself has discussed modern economic theories of multinationals and the growth of the firm and the relationship between them and empirical research, and generally there has been more discussion between historians and economists about the multinational enterprise than about any other topic. Yet, with the exception of 'free-standing companies', this is a book without concepts. Its approach is that of traditional empirical historical research – carefully researched facts are presented to the reader with an intelligent commentary on how they should be interpreted. Thus, although much new evidence is provided on why direct investments were made and on why particular institutional and contractual forms were adopted, there is little search for systematic factors in these decisions, and no explicit discussion how this evidence relates to existing economic models. One opportunity cost of this approach is that economists and other students of international business may find the material in this book is inaccessible. On the other hand, Wilkins has placed an enormous amount of well-organised empirical research into the public domain, which others can use as a sort of rich gold mine of facts and ideas.

This book, then, is a major achievement. The book is important for American, British and other business historians. It makes a distinctive contribution to the history of foreign investment and international business, and it offers major insights into the impact of foreign investment in a developing economy. One is left to marvel at the energy and concentration which could have produced such a fine work of scholarship.

University of Reading GEOFFREY JONES

ROZANNE E. JUNKER, *The Bank of North Dakota: An Experiment in State Ownership* (Santa Barbara, CA: Fithian Press, 1989. Pp.vi + 185. $9.95).

This is essentially a very readable political history of an unique American institution, a State-owned bank operating alongside thousands of private establishments. Today it is the largest bank in North Dakota and a major correspondent bank for the private banks in the State and in line with the original purpose it continues as a depository for State funds, the main source of its deposits, and as a major lender not only to agriculture but to other economic activities as well. Profits are transferred to the State. But it was not always so well respected. The story of its formation and the ensuing intense political struggles are the subject of this short book.

Established by the Nonpartisan League, a local political party, shortly after the end of the First World War, its essential role was to provide credit at cost to farmers within the State. This singular purpose aroused the collective hostility of the private bankers, all charging considerably higher interest rates and imposing harsher terms. Their opposition was forcefully voiced in the State legislature and took practical form in determined attempts to discredit the Bank's public offer of bonds, a campaign which went all the way to Wall Street. The farmers, however, welcomed its services. They appreciated the availability of cheap credit in the difficult interwar years and particularly the tolerant attitude of the Bank towards those who found they had to default on interest payments in the desperate conditions of the Depression. There seems to have been only one instance where the Bank's debt collectors met with the gun, which is rather surprising given all the circumstances.

The Bank's employees occasionally fell victim to its political position. An election could produce new political masters, and an exodus of employees sometimes followed. One new governor campaigned on a platform of removing nepotism from State organisations but then proceeded to fill the Bank with his friends. However, such political house-cleaning was careful not to threaten the working of the Bank and the 'real' bankers were left to carry on with the essential work. Some of this was distinctly innovative since the Bank developed the useful device of bundling together several loans and selling them to another local financial institution, thereby increasing the flexibility of its asset structure. With such 'securitisation' it was well ahead of many of its opponents.

The postwar years was a period of consolidation, but recently the Bank has expanded its operations and plays a major role in the State as a wholesale and correspondent bank, leaving the retail market to its old rivals. It is now accepted by its former critics, providing them with essential financial services, while general political support is constantly assured by the transfer of large profits to the State's budget.

This is an interesting and well written addition to the literature on US banking history, but the emphasis is on political struggle, which is understandable given that the Bank represents a socialist experiment in a capitalist stronghold. Even so, a few tables reflecting changes in the Bank's balance sheet would have been revealing, and an index is always useful.

University of Liverpool W.A. THOMAS

NICOLE W. BIGGART, *Charismatic Capitalism: Direct Selling Organizations in America* (Chicago: University of Chicago Press, 1989. Pp.xiii + 223. £19.95).

ARTHUR J. PULOS, *The American Design Adventure, 1940–1975* (Cambridge, MA: MIT Press, 1988. Pp.vii + 446; illus. £44.95).

For British business historians, marketing remains among the least well-researched branches of the discipline. Such comparative neglect probably springs from an all too common view in Britain that there is something rather discreditable about marketing: a hangover from the pre-1914 era when carriage folk deliberately shunned goods that were heavily advertised. That conflicts with the very positive American attitude towards marketing, and the books under review should be read with this cultural difference in mind.

The desire to tell a gripping story ('On Wednesday night 11 December 1985 ...') has blunted Dr Biggart's initial need to clarify what aspect of marketing she is concerned with. Direct approaches to the public, through by-passing conventional distribution channels, go back in Britain to Singer sewing machines in the 1860s, and the interwar vacuum cleaner and encyclopaedia salesmen are still remembered. The sales forces were often full-time and trained within the firms concerned (p.19). By contrast, the direct selling organisations (DSOs) discussed here tap a labour pool of generally under-educated housewives, by entrepreneurs able to utilise a highly motivated force while paying them comparatively little. In Britain, the Tupperware party organiser and the Avon (cosmetic) lady have enjoyed the cachet of being part of the community – unlike, say, the brush salesman – and they have benefited from being able to exploit the social obligation (p.186 n.56) which in restricted communities can override price considerations in inducing people to buy.

Biggart discusses DSOs in terms of sociology, anthropology and social history. Yet much of what she says could have been more satisfactorily explained by economics; she shows little understanding of economic method (pp.175–6) and quite astonishingly suggests that the great Max Weber was also economically illiterate (p.212 n.1). Her estimate (p.2) that DSOs sold $8.6 billion worth of goods and services in 1984 has meaning only when compared with total US personal-sector consumption, of which they represented less than 0.4 per cent. Rather than seeking to assess the performance of all DSOs by taking a random sample, she chooses to study only successful and established ones, in accordance with Weber's method of taking 'ideal types' of organisation, cryptically described here as 'sociohistorical abstractions of real instances of a phenomenon'.

An important question, inadequately discussed here, is why do DSOs do well in the US and in the Pacific ring countries of Asia, but relatively poorly in Europe? Taking country-specific characteristics, there is undoubtedly a spirit of independence and entrepreneurship among US women which DSOs can harness; quite recently, during the huge Exxon oil spillage in Alaska, an Avon lady sold a clean-up company $32,000 worth of 'Skin-So-Soft' for employees to rub into their severely chapped hands (*Observer*, 27 August 1989, p. 19). By contrast, British attitudes have already been mentioned, and some other European countries have legal restrictions on hawkers' access to homes. Why, then, are Italy and Spain good 'arenas' for DSOs but not, say, France or West Germany? More precise information is required about, say, legal barriers and women's participation rates in the employed labour force.

Arthur J. Pulos had earlier written *American Design Ethic: A History of Industrial Design* (MIT Press, 1983), which described and lavishly illustrated successive changes in US product specifications from colonial times to 1940. This sequel continues the story to 1975, covering what he calls the 'heroic era' of American industrial design. During that era, the earlier emphasis on functional and often geometrical forms was by the 1960s giving way to more elaborate, and even fanciful, designs. That development he associates with the inexorable trend towards multinational manufacturing on a global scale, with local designers adapting the basic models to the preferences of specific markets. By 1975 the supreme preoccupation of subsequent decades was just making itself felt: a concern for the environment. For instance, Boeing's projected rival to Concorde was defeated by a widespread public outcry about sonic booms and a danger to the ozone layer. This is an undemanding account of design changes, which gives fewer insights than expected into the marketing explosion that has taken place in the US since the 1940s.

University of Reading T. A. B. CORLEY

GEORGE HORSMAN, *Inflation in the Twentieth Century: Evidence from Europe and North America* (Hemel Hempstead: Harvester-Wheatsheaf, 1988. Pp. xiv + 299. £28.50).

This book was written for students of economic history and economics. However, Horsman has tried to eliminate as many technical expressions as possible so that his book will also be accessible to people with a knowledge of elementary economics. He has selected examples of inflationary episodes in the economic history of Europe and North America since 1914. In the period before 1945 he has used the classic examples of the German hyperinflation of the early 1920s and the French inflation of 1918 to 1926. He also looks at the less well known inflationary episodes of the 1920s in Austria, Hungary, Poland and the Soviet Union. Horsman also covers the suppressed inflation in and after the German Third Reich. In the post-1945 period he looks at the Hungarian hyperinflation of 1945–46, 'the greatest in the world's recorded history'. He then considers inflation in the centrally planned economies and the upsurge in world inflation after 1965. He illustrates this upsurge by taking the examples of the United Kingdom and the United States. Finally he considers the lessons which can be learnt from inflation in the twentieth century.

Few books have been written in the field of monetary history which have the explicit intention of being accessible to non-specialists. So this book is a useful addition to the literature in this respect alone. It also provides a broad coverage of the inflationary episodes of twentieth century Europe and North America. While the experience of inflation in Germany, France, the United Kingdom and the United States has been widely covered in the existing literature, this is not the case with the experience of Austria, Hungary and Poland. There have also been few attempts to provide a synthesis of the twentieth century experience of Europe and North America as a whole.

Horsman's selection of inflationary episodes from the inter-war period is comprehensive and certainly serves the purpose of his book well. However, this is not so true of the examples he has selected from the post-1945 period. As Horsman points out, in the case of Eastern Europe and the Soviet Union there are problems in assessing the accuracy of the source material. Nevertheless, it is surprising he does not consider in much greater detail the post-1945 experience of inflation in Yugoslavia, where the source material is more reliable and readily available. Accurate source material exists for the OECD countries in the post-1945 period. Yet Horsman only uses the experience of the United Kingdom and the United States for detailed case studies. It would have been useful to have a case study from continental Western Europe, for example France or Italy, given his intention of drawing lessons from the 'European' experience. Perhaps his concentration on the post-1965 British and American experience is related to the fact that he has used mostly English language secondary sources.

Based on the evidence considered in his book, Horsman, unlike certain other economists, concludes that there are no general laws of inflation. However, he does find a number of marked tendencies. The strongest of these is that inflation tends to result from a transfer of income or wealth between groups within a country or between countries. Horsman believes that a central and regular source of augmented inflationary pressure lies in the conflict over income shares. Hence, if this conflict did not exist, inflation would not persist. In order to avoid inflation, some kind of mechanism is required to oversee the distribution of income and wealth. However, his conclusion will not find favour with neo-classical economists who believe that 'conflict' is necessary to maintain an efficient and competitive economy. Nevertheless, the post-1945 history of inflation in West Germany and Sweden, where there has tended to be a broad consensus over the distribution of income and wealth, would seem to support Horsman's main conclusion.

This book provides a valuable insight into an important aspect of the economic environment within which European and American businessmen have operated in the present century. It will be useful background reading for students of twentieth-century European economic history, and also for students of twentieth-century European and American monetary history.

Wolverhampton Polytechnic RICHARD A. HAWKINS

RICHARD B. DU BOFF, *Accumulation and Power: An Economic History of the United States* (Armonk, NY: M.E. Sharpe, Inc., 1989. Pp.xii + 223; tables. $38.50).

This interesting and provocative work is a revisionist essay which puts together a dash of Schumpeter, a slug of liberal Keynesianism, and several shots of Marx and followers, to create a powerful attack on the confident conservative orthodoxies of neoclassical economic history and Chandlerite business history. Du Boff seeks to integrate business and economic history, and to place the 'dominant firm' in manufacturing, transportation, and the financial sector at the heart of his critical account of American economic development.

He gives some attention to the beginnings of American industrial society, c.1790–1860, but the heart of the book discusses 'The Grand Traverse of the American Economy' and the 'New Age of Monopolization', c.1860–1902 and 'Oligopoly and the Pursuit of Prosperity, 1900–1929'. Du Boff offers us a very Lamoreaux-ish account of the great merger movement. His sensitivity to the institutional history of corporate America and how 'imperfect markets' actually worked distinguishes his account from that of other overviews of American economic history; his dissatisfaction with the mechanistic whiggishness of the 'strategy and structure' argument results in a generally persuasive critique of Chandler; and he provides hard data on patterns of economic growth, investment, income distribution, etc. usually missing from outline business history texts.

Given Du Boff's interest in the underdevelopment of the American state, his inattention to the 1930s is surprising; it will certainly reduce the book's value and attractiveness as undergraduate reading. Chapters 6 and 7 deal with the great postwar boom, the growth of military Keynesianism, the 'oil shocks' of the 1970s, and the Reagan era. The nearer he comes to the present, the clearer it is that what he intends to offer is a thoroughly anti-celebratory account of American economic development, informed by present concerns about America's relative decline and the growing burden of public and private indebtedness. This comes through strongly in his chapters on foreign trade and foreign investment, charting America's course back to debtor status and a massive imbalance of payments, and his conclusion, which discusses its failure to deliver economic and social security, or an acceptable and attainable quality of life, for a large proportion of its population.

Du Boff explains much of this sorry performance as a result of 'the nature and exercise of corporate power' (p.185) – 'for big business, profitable growth strategies are linked to the attainment of market power, which often engenders bureaucratic management and conservative policies. Excess profits can accrue long enough to lull corporate giants into a false sense of security. Among the predictable results would be technological lag, periodic attempts to shore up profits and power through mergers, and administrative hypertrophy' (p.175).

Du Boff runs up against the American radical's dilemma – the system fails in so many respects; and yet it remains accepted. What he offers his readers is an intelligent explanation of why this should be so. His anger and frustration are barely concealed at times, but the book never degenerates into a polemic and should hold the reader's attention.

University of Durham HOWELL JOHN HARRIS

WILLIAM G. ROBBINS, *Hard Times in Paradise: Coos Bay, Oregon, 1850–1986* (Seattle: University of Washington Press, 1988. Pp.xiv + 194; illus.; maps. Cloth, $30.00; paper $14.95).

Professor Robbins' book is a study of the rise and fall of the timber economy of the Coos bay area of Oregon. It examines the 'cut and run' free market policies of the big companies and the small contractors. It combines a study of an area's timber industry with an examination of the social cost of unrestricted lumbering on the communities which were left behind when the hills had been denuded of timber.

Robbins is a specialist in the history of forest industries, having written two earlier books on the American timber industry. In this book he shows that he is aware of similar patterns of economic exploitation to that in Oregon not only in other parts of the United States but also in Canada and Australia. In his conclusion he reflects, albeit too briefly, on the demand of the international economy for timber, mineral and other raw resources.

The focus of the book is more on the impact of the lumbering companies on the workforce and the wider community than on the economic performances of the individual companies. He does not try to examine the pace of the spread of lumbering in the North-west by means of economic theory or statistics, in the way that historians have argued over the development of the cotton industry. It is not that type of book.

It is an interesting, easy to read and well researched local history, resting heavily on interviews and the local press. Presumably company records have not survived, or are not available. As a result he offers a broad picture of the area's timber industry, with its mix of large companies and at times a host of small scale operations involving 20 men or less. Given the short life of many of these small concerns, which mushroomed up in times of boom, it is especially interesting to have such an assessment of their part in the timber industry.

The small outfits, known as gyppos, flourished in the boom years after the Second World War. They operated on the basis of small credit, little capital equipment, much disregard for safety, and a hatred of unions and government regulations. They pushed for high output and paid high wages when times were good. On the basis of his interviews, he suggests that, in spite of the physical risks of high output and often poor equipment, they were attractive to many in the labour force. Men were trained in the big mills, then worked for the greater money with the buccaneering gyppos, but later, when they were older and had slowed down and wanted more security, they returned to the big firms.

However the ruthless exploitation of the timber, both in the interests of short term corporate need and quick profits for the gyppos, resulted in area's resources being rapidly exhausted. The big companies operated their old machinery until its life was over and then closed down their plant. The workforce found that it had lost its pension benefits and received no redundancy pay, and, in a rapidly declining industry, had little chance of comparable employment elsewhere. Thereafter, as the director of a community centre put it, people realised 'that a willingness to work hard all their lives didn't ... protect them from the system'. It is a sad tale of losing communities in the American enterprise economy.

Nottingham University CHRIS WRIGLEY

Rondo Cameron, *A Concise Economic History of the World. From Paleolithic Times to the Present* (New York and Oxford: Oxford University Press, 1989. Pp.xiv + 437; illus.; maps. £30.00).

One of the most striking things about this book is that is has been written at all. To attempt to write such a monumentally comprehensive work is beyond the ambitions of most of us. But Rondo Cameron, with the weight of scholarly experience behind him, is equal to the task. In truth the focus of the book is a little narrower than the title implies, though nonetheless vast. It does deal with the Stone Age to the very recent past but the main substance is concerned with the modern period, and within this, developments in Europe and the USA. Thus, there is one full page of text on the (ancient) Arab World, fewer than three on China while Belgium gets four. Many of us may find quibbles with points on our specialisms, yet few, if any, of us can fail to learn something from these pages. At the risk of being petty, some points are bound to raise eyebrows. Should Switzerland be included in the 'latecomers' to industrialisation? Before 1850 in *per capita* terms this was one of the most highly industrialised of nations. And there is frequently a failure to distinguish between 'England' and 'Britain'. This is particularly significant in looking at the legal foundation of early industrialisation in England (p.209). In such a wide ranging 'mega history', however, it is impossible to deal with everything in great detail.

Cameron's basic purpose is to examine economic history using the concept of the logistic. This describes a curve of population growth which shows a tendency to flatten out until some technological change – or 'epochal innovation' in his terms – leads to a new phase of accelerated growth. Three great logistics can be observed historically: from the ninth or tenth century to the twelfth or thirteenth; the mid-fifteenth to the seventeenth century; the mid-eighteenth to the early twentieth century. It is Cameron's hypothesis that economic change follows the same pattern: significant developments accompanying the upward slope, deteriorating social conditions following the phases of deceleration. Thus, he touches on social, intellectual and political factors as well as economic. The empirical material is thoroughly surveyed but Cameron is curiously inconclusive about how well his narrative accords with the hypothesis.

Cameron's great qualities are in his ability to cover such a wide range of material in a concise way with admirable clarity. Not surprisingly he deals with developments in France excellently; his examination of complex material on nineteenth-century French industry, dispelling myths of retardation in five pages. The book was written as an introductory text for American students, and it provides a broad backcloth to more detailed studies with quite a lot of elementary exposition of economic concepts. I am not sure that there are appropriate courses to provide a sufficient market in Britain for this as an introductory text.

The book is excellently produced. There are numerous well chosen illustrations and a host of diagrams which add to, and not simply adorn, the exposition of the text. Also the many maps are particularly useful and clear despite the practical difficulties of size and monochrome printing. All of this adds up to good value but a high price which will seriously restrict the number of purchasers.

University of East Anglia Roger Munting

CHARLES P. KINDLEBERGER, *The International Economic Order: Essays on Financial Crisis and International Public Goods* (London: Harvester, 1988. Pp.xi + 237. £25.00).

This is Professor Kindleberger's seventh collection of essays. All of the papers are quite recent, largely non-technical pieces, most of which have been previously published. The essays are organised under two main heads: financial crises and international public goods. The strong unifying theme is Kindleberger's view that whereas free markets work quite well in the long term, there are occasions when supramarket intervention can contribute to stability and, thus, to the common good. Such intervention is, therefore, to be recommended. Experience provides the convincing empirical underpinning for this view; not the least of the reasons why Kindleberger's approach is so attractive to many economic historians. In toto the papers make for an interesting volume, bristling with the ideas now closely associated with the author.

In his analysis of the causes (and avoidance) of financial crises he reasserts his faith in the Minsky model. He does agree with monetarist historians that it is sensible for the authorities to pursue a policy of steady monetary growth but he does not believe such a policy will prevent crises. More stridently, he is dismissive of a 'rational expectations' theory of market behaviour, stressing the importance of psychological and confidence (or irrational?) factors during actual crises. He also believes that price movements can play a critical role, arguing that 'money illusion' has been important in the dynamics of historical crises. However, he embraces no single theory of crises and, instead, stresses the complexity of economic forces and the uniqueness of historical events. His main policy prescription is the need for a strong and effective lender of last resort, although he is also keen to stress the need for discretion and discernment on the part of the authorities – monetary management is seen very much as an art rather than science.

Faith in the market mechanism in normal circumstances tempered by realistic acceptance of the inevitable emergence of abnormal conditions (crises) also permeates Kindleberger's essays on the international order. The inevitability of breakdown justifies his advocacy of strong leadership and – in a crisis – of the need for an international lender of last resort. It is his view, of course, that the problems of the interwar period owed much to the waning of British international hegemony and the failure of the USA to fill the vacuum. American dominance/leadership by the close of World War Two underpinned the international expansion of the following two decades; and the relative decline of US economic strength since then is considered to be central to the international problems that have been manifest from the early 1970s. To Kindleberger the lesson of history is clear: it is essential for a powerful nation-state to commit itself to producing the public good of international order and stability. Without it, all participants in international trade are losers.

It is not necessary to accept the analysis wholesale in order to derive a great deal from the volume. The breadth of political, social and economic argument is impressive, and the prose is evocative and stimulating. The volume provides an excellent opportunity to introduce undergraduates to Kindleberger's thought-provoking views.

University of Leeds MICHAEL COLLINS

MARION DIAMOND, *The Sea Horse and The Wanderer: Ben Boyd in Australia.* (Melbourne: Melbourne University Press, 1988. Pp.xiv + 254; illus.; maps. A$34.95).

Although *Seahorse* and *Wanderer* were respectively an advanced cargo paddle-steamer and a topsail schooner this study cannot be said to fall into the area of serious maritime history. Neither can it be considered to fall into the realms of either banking history or business history, for while the focus of its attention was the chairman of the Royal Bank of Australia and certainly undertook many commercial activities, these basically provide a backcloth to what is essentially the biography of a remarkable man and of his impact on Australia.

As Benjamin Boyd came from a well connected but impecunious Scottish family, he and his five brothers were obliged to seek their own fortunes. Ben's first step was to become a Member of the London Stock Exchange, but his career was not assured until 1832 when he was appointed as a resident director of the Edinburgh-based North British Insurance Co. He and his brother Mark subsequently joined with other directors of this firm to establish the London Reversionary Interest Society and the Union Bank of London. Ben also joined the Board of the St. George Steam Packet Co. of Liverpool and was then, in 1840, the prime mover in the formation of the Royal Bank of Australia.

This was only one of a number of institutions which were set up at this time to take advantage of the expansion of the New South Wales wool industry. It proved to be difficult to sell many of the Bank's shares to the public and they had to be taken up by the other companies with whom Boyd was involved. However it was possible to sell large numbers of its 5 per cent debentures, and it appears that it eventually obtained a capital of £300,000. In the short term this meant that Boyd (who became chairman with almost absolute powers) was a wealthy man and he used some of these resources to purchase the 141-ton *Wanderer* and this then helped him to gain entry into the exclusive Royal Yacht Squadron at Cowes. In the longer run the Bank needed to make substantial profits to satisfy its stockholders, so in 1841 Boyd left England in his yacht to supervise its activities in Australia.

On his arrival in Sydney, Boyd found that the colony was suffering from a severe slump. Thus although the Bank and its associate, the Australian Wool Co., opened their doors the Official Receiver later claimed that their activities were 'a mere pretence' and 'a fiction'. Some banking was undertaken but these few transactions, including a loan to the New Zealand government, proved to be unprofitable. Boyd, it seems, then used these concerns as a cover to buy sheep, accumulate squatting runs and operate the three steamships and two sailing vessels which he had brought out from Britain. These initiatives quickly gave him a position of immense power in both the economic and political spheres. His apparent wealth and his links with London ensured much respect and special treatment and at his peak he claimed to have title to over a million acres. Unfortunately none of these enterprises were successful so the foundations of the Bank were steadily eroded. In 1848, therefore, the London Board arranged for him to be replaced and his cousin, William Sprott Boyd, was sent to Sydney.

A series of manoeuvres enabled Boyd to salvage a modest amount from the wreckage of his investments but this would soon have been offset by enormous debts which were later estimated to be £415,780. Accordingly he sailed from

Sydney in *Wanderer* in October 1849, and then headed for San Francisco where he hoped to benefit from the discovery of gold. However Boyd found no more success in California than he had in Australia and after an abortive year's stay he and his party sailed for Hawaii. This was followed by a visit to the Solomons where he was thought to be seeking a base to create some form of private empire similar to that of 'Rajah' Brooke. Unfortunately this unlikely dream came to a sudden half early in October, 1851, when Boyd was killed in a native ambush.

Benjamin Boyd's remarkable career makes a fine story and it has been well told. While providing an excellent illustration of the way in which nineteenth-century London responded to a determined entrepreneur with the right family connections, this work is really more concerned with the difficulties which he encountered in New South Wales during the depressed 1840s. The study is based on extensive research and is presented in a scholarly manner. It also has the virtue of not assuming that every reader will have a basic knowledge of Australian history and sufficient detail is included to enable the non-specialist to learn much about the colonies in their immediate post-pioneering era.

University of Liverpool P.N. DAVIES

CHARLES ISSAWI, *The Fertile Crescent, 1800–1914: A Documentary Economic History* (New York and Oxford: Oxford University Press, 1988. Pp.502. £29.50).

For many years Charles Issawi taught a course on the nineteenth- and early twentieth-century history of the Middle East, and his prolonged reflections on the topic have produced a monograph and a number of collections of documentary material. The present volume, which covers greater Syria and Iraq, is a further collection of some 156 documents dealing with trade, transport, agriculture, industry and finance. Like its predecessors the volume will be extremely valuable to anyone involved in teaching or studying the economic history of the region. As in former volumes, Issawi provides an introduction which sets out the state of our knowledge of the topic in the light of recent research and he also intersperses background explanations among the documents.

Issawi sets out the principles governing his selection, which are generally to choose material in Middle Eastern before that in European languages, to give preference to French documents over British, and to select unpublished rather than published material. In fact, as his choice proves, these admirable principles are more easily enunciated than implemented and the selection includes many European language documents previously published by governments, several of which are in English. The fact is that Europeans are much more likely to tell economic historians what they want to know; they may get it wrong but they are much more likely to address the problems with which we are concerned. And relevant material from the Ottoman archives is not usually available. Some doubts may be expressed about the wisdom of including certain documents. Issawi has chosen a few translations of passages from modern Soviet and other books on the Middle East, many of which seem to be of little merit and are poor substitutes for the immediacy of contemporary documents.

European documents also have their disadvantages. One feature of them is that they were often written by people with an axe to grind, and one needs to know the shape of the axe before evaluating the document. For example, before reading the documents by Harford Jones and Farren one should be aware that they were anxious to preserve their respective posts in Baghdad and Damascus and were not disinclined to exaggerate the economic value of the regions. Issawi tends to take these documents at face value. On the other hand, a frequent feature of the European documents is that their writers seem too often concerned to say how awful things were. In fact we know that in the later nineteenth century and early twentieth century the region experienced an economic boom, but one would find it difficult to demonstrate this from the European documents. At least the documents of Middle Eastern origin are more optimistic.

The economic historian of the Middle East has still to work largely through the interpretation of literary sources. Issawi repeatedly warns of the unreliability of the statistics in the documents; the trade figures badly understate local trade and the financial statistics are often no more than updates of the estimates of earlier years. Bearing these problems in mind the selection of sources gives a fair picture of many areas of economic activity, but is inadequate in respect of two important sectors. In agriculture, cash crops are over-emphasised and there is little about the production of grain, by far the most important agricultural activity. Nor is there much about the pastoral economy despite its importance in Iraq. In regard to industry, the most important industrial activity, construction, is virtually ignored.

This is beginning to sound like a niggling, complaining review but it is not intended to be so. Issawi has written a fine, pioneering work and the remarks made may indicate where we must go from what is now the new starting point.

School of Oriental and African Studies M.E. YAPP

RUCHIRA CHATTERJI, *The Behaviour of Industrial Prices in India* (Delhi: Oxford University Press, 1989. Pp.xi + 224. £9.95).

Though India's half-hearted liberalisation has not quite lived up to the brave new world promised by Prime Minister Rajiv Gandhi in 1985, both in terms of the sheer size of her internal market and its links to the international economy the Indian economy to-day compels attention in a way it did not during the famine-stricken 1960s. The erudite and scholarly analysis of the evolution of industrial prices in India by Dr Ruchira Chatterji provides valuable insights to the functioning of this increasingly complex economy marked by uneven growth. The study, spanning a period of 30 years (1947–77) undertakes an analysis of the industrial sector as a whole as well as the six major groups of industries including sugar, textiles, paper, iron and steel, chemicals and general engineerng which, together, roughly account for 70 per cent of total industrial output. A helpful appendix provides the sector-wise time series data and detailed information on the specification of the basic model on which the study is based.

The main finding of the book – that industrial prices are based on a 'mark-up' over costs and that demand factors have no significant role to play in the process – will probably come as no great revelation to those familiar with the oligopolistic nature of the Indian industrial economy. Where Dr Chatterjea sheds new light is in her demonstration that such practices are more likely to be found in relatively modern industries compared to the more traditional sectors such as food, textiles and manufacturing which are characterised by more competitive conditions. The difference is attributed to the dominance of large business houses by the managing agency system whereby a single group of decision-makers can control both the behaviour of several firms within the same branch and the policy of protection extended to infant industries.

The real strength of the book however lies in the rigorous statistical tests on Indian data, carried out on conjectures derived from previous theoretical work in the area. An impressive introductory chapter discusses the contrasting views of Kalecki (1971) and Coutts, Godley and Nordhaus (1978) on price/cost relations. In applying the conjectures arising out of the latter to the Indian case, Dr Chatterjea has prudently added a few caveats to underline the specific characteristics that distinguish it from western economies. Important among these attributes is the status of India as that of a quasi-closed economy pursuing an import-substituting heavy industry strategy. This crucial boundary condition is also a major limitation to the applicability of the study to the present situation. Though India was, during the study period, virtually a closed economy, extension of the analysis in time would require the relaxation of this assumption because the earlier insularity is now largely gone and international prices have begun to play a bigger role.

A second limitation of the study is to be found in its exclusive reliance on factors endogenous to the industrial sector in explaining industrial price fluctuations in India. After the token admission of the role of government policy and control over the economy, no systematic attention is given to the analysis of its impact. A more comprehensive model, including government intervention as an exogenous variable would of course be more difficult to specify. A vote-hungry government can easily see the logic in following rather different pricing policies with respect to articles of mass consumption such as sugar compared to engineering goods. Further, as regards the demand structure, the wage policy of India's communist regional governments is likely to be different from others. One would then need to introduce more specific assumptions to the data on the regional distribution of the wage structure. Perhaps further research on industrial prices in India will take these political and sociological factors into account. As a pioneering effort in the field, the book will be of considerable use to policy-makers and students alike.

University of Hull SUBRATA KUMAR MITRA

F.H.H. KING, *The Hongkong Bank between the Wars and the Bank Interned, 1919–1945: Volume III of the History of the Hongkong and Shanghai Banking Corporation* (Cambridge: Cambridge University Press, 1988. Pp.xxxviii + 704; illus.; £60.00).

This is the third volume in Frank King's comprehensive history of the Hongkong and Shanghai Banking Corporation. Like its predecessors this book is a very substantial volume, in both senses of that word, and will repay the reader's close attention. When it became public knowledge that the history of the Hongkong and Shanghai Bank was to extend to four volumes this reviewer thought that this was somewhat excessive for a bank which was not yet 150 years old, especially as two British banks are contemplating having their tercentenary histories encompassed in a single volume. Having read this book I now recant of my earlier view, for this work must rank amongst the best of business histories and I cannot find any part of it which is not germane to the story.

The book is organised in three parts. Part One, with three chapters, takes the story to 1927. Part two, with seven chapters, deals with the Depression and its aftermath, while part three, with three chapters, tells the story of the Bank in wartime. Perhaps the most impressive and satisfying aspect of the book is the extent to which it is based on the Bank's own archives and the recollections of former employees and others who had dealings with it. In addition to an impressive list of secondary sources, archives were also consulted in many parts of the world, especially in London.

Those who were responsible for running the Hongkong and Shanghai Bank began the interwar period in the same frame of mind that occupied bankers and businessmen in other parts of the world. The Bank had three major roles. Firstly, it was an exchange bank providing finance for international trade. Secondly, it was an investment bank as part of the China Consortium providing development capital for China; and thirdly, it was a commercial bank providing ordinary banking services for its customers. The Bank was in a strong position and those who ran it expected that things would return to normal, yet adjustment to post-war conditions required careful planning and forethought which took time. By 1928 the Bank was facing several problems not the least of which were Chinese political disturbances and a decline in the price of silver. This was compounded by the problems faced by the international gold standard. The story of how the Bank and its staff coped with these problems is told with conviction and sensitivity. When Hongkong was invaded by the Japanese in December 1941 the Bank and its people were effectively interned. London office became the temporary head office of the Bank.

There are at least two factors which make this book a suitable model for other banking histories – the treatment afforded to the branches and to the staff. All too often, banking histories tell their stories as if there were only two employees, the chief executive and the chairman, and as if all that happened of importance to the organisation occurred in the head office. Not only has Frank King avoided these pitfalls; he has also been able to provide a great deal of detailed information on both topics. These combine to give the book both breadth and depth. Chapter 6 on *Juniors and Compradores* is not the kind of chapter found in many bank or business histories. It tells the story of what it was like to be a young British or Chinese employee of the Bank. Based mainly on oral sources it is a fascinating insight into working and social life.

Similarly a very thorough and interesting job has been done with the branches both in Europe and in the East. The places where they were situated, the staffing, the business which they conducted and the problems which they faced are dealt with in detail. All this contributes to the provision of a very complete picture of the Bank's activities.

Nor is this book hagiographical, either of the Bank or of its managers. Various problems and frauds are described and evaluated in a sensible and sensitive manner.

In the preface to this book Frank King claims that the financial history of the East cannot be understood except with reference to the history of the Hongkong and Shanghai Banking Corporation. This claim is entirely vindicated in a book which is a delight to read. It is the product of considerable scholarship and meticulous archival research.

The Institute of Bankers in Scotland CHARLES W. MUNN

JAMES V. JESUDASON, *Ethnicity and the Economy: The State, Chinese Business and Multinationals in Malaysia* (Singapore: Oxford University Press, 1989. Pp.xvi + 218. £19.50).

The costs of Malaysia's New Economic Policy launched after 1969, in terms of lower rates of economic growth industrialisation, and of ethnic disharmony, are a commonplace in the literature on recent economic development in Southeast Asia. Even at the beginning of the 1960s, studies by Fisk and others were pointing to the potentially damaging prospects for Malaysia's economic progress held out by the juxtaposition of an economically powerful but politically weak Chinese minority on the one hand, and the politically dominant but economically weak Malay majority on the other. The position was exacerbated since Chinese strength was relatively greatest in key sectors and key regions of the country, and, of course, the sorry debacle of Singapore's brief entry into the Federation of Malaysia (1963–65) was dominated by ethnic issues. At Independence in 1957, Malaysia's population of 6.3 million was 50 per cent Malay, 37 per cent Chinese, and 11 per cent Indian. But the native Malays belonged overwhelmingly to the agricultural and smallholder classes, and income levels were much lower than for the other ethnic groups. Nearly all industrial and commercial enterprises were in the hands of Chinese, Indian, or foreign (mainly European) groups. After a decade of relatively *laissez-faire* policies in the 1960s, during which Chinese business remained predominant within Malaysia, the Malay-dominated government changed direction after the riots of 1969. Since that time there has been increasing pressure on non-Malay economic groups, and strenuous efforts have been made by the government to promote Malay-based industrial and commercial enterprise and to raise the relative economic status of the Malay community as a whole.

Dr Jesudason's book is on his Harvard doctoral thesis, and belongs to the genre of 'development sociology'. He advances our understanding of Malaysian economic development in two principal ways, by providing a coherent framework in which the chief actors in the Malaysian economy, the state, the Malay business groups, the Chinese business groups, and the multinationals can be incorporated and analysed; and also by providing considerable empirical information in areas where such data are hard to find and are often buried in political speeches or newspaper interview by politicians.

The author's starting-point is to build on existing models by such writers as Deepak Lal and Peter Evans to show the inadequacy of both neo-classical and new dependency theories for understanding developing countries with economically powerful minorities, such as Malaysia. Neo-clasical economists would expect the role of states to diminish as market forces promote maximum growth. Dependency theorists expect, among other things, developing countries to try to control the activities of multinationals and direct them to the essential high technology, high capital-intensive sectors which cannot be developed internally. In Malaysia, by contrast, we find the state becoming increasingly more powerful after 1970, and the multinationals maintaining with state blessing a significant role in relatively low technology and low capital-intensive enterprise. The reasons are to be found in the Malay élite's wish to restrict Chinese business power and to elevate the position of native Malays. Maximum economic growth and maximum national economic hegemony take second place to social and economic restructuring.

Jesudason provides in this book a fascinating insight into the behaviour, aspirations, and political compromises of the various groupings in modern Malaysia. Much of the author's analysis is concerned with the ways in which political parties representing the main groups manoeuvred for support and power in the years following Independence, yet he also pays attention to the micro level, to the individual Chinese and Malay business leaders and their performance during this critical period. Malaysia's failure to join the most successful Asian industrialisers, despite a favourable start in terms of resources and income levels, is illuminated by the author's analysis. Dr Jesudason is also able to show how for special reasons (such as improving terms of trade and the income from newly-discovered oil) the New Economic Policy could progress smoothly prior to the mid-1980s, with the government transferring massive sums to the Malay sector. But external circumstances and internal inefficiencies have subsequently led to increasing economic problems which lie at the heart of Malaysia's present dilemmas.

This study should certainly be read by all interested in the economics and politics of modern Malaysia. The author writes with clarity and authority and, while focusing on a single country, yet gives an analysis which has implications for understanding the development process in all countries with economically powerful ethnic minorities.

University of New England MALCOLM FALKUS

GARRY RODAN, *The Political Economy of Singapore's Industrialization: National State and International Capital* (London: Macmillan Press, 1989. Pp.xvii + 266. £35).

Books on Singapore's recent economic development are a growth industry. As a rule, they are also fairly predictable. The present book, however, differs from the usual pattern in trying to look at the rapid industrialisation of Singapore from a perspective of the political left. In 1959, the People's Action Party, newly-elected to power under the leadership of Lee Kuan Yew, anticipated fulfilment of its strongly economic-development-oriented programme through industrialisation and merger with Malaya, to provide the market required for industry in the town. The break-up of Malaysia after just two years, in 1965, frustrated these plans. Just at this time, however, and most opportunely for Singapore, a new phase in international investment began, based on the search by Western multinational enterprise for cheap labour necessary to maintain competitiveness in manufactures with low value added and a corresponding importance of wages in total cost. Equally crucial, Singapore's politicians quickly and decisively responded to this opportunity, adapting Singapore to the needs of foreign multinationals. Since the late 1960s, the resulting industrialisation, organised throughout very largely by multinationals manufacturing for export to developed countries, almost certainly produced a higher GNP per capita – by 1987 US$7,940 – for Singaporeans than any alternative development regime could have.

Rodan tells this story to show that in Singapore, and by implication other NICs, the state must be seen as a critical actor. More than that, its relationship with the market, represented by multinationals' business investment decisions, requires a dialectical analysis. State and market meet, interpenetrate, and are changed thereby. Fundamental in this process is the state's ability to shape comparative advantage through altering the prices to which the market responds. Certainly, this approach, essentially historical in nature, can provide an adequate analytical framework for considering what happened in Singapore. International competitiveness was established as a main macroeconomic target, and the wage rate the assigned policy instrument, which the government could use through having gained control of the political process and labour movement. Competitive wages and a variety of 'signalling' devices to attract multinational investment flows with improved technology embodied in these, delivered rising *per capita* income. The government's economic policies were thereby legitimised, which in turn strengthened its political position.

The role of the state in anticipating comparative advantage and directing the economy accordingly is an interesting aspect of NIC development. But Rodan could have usefully extended his analysis by referring to a literature on Taiwan and, especially, South Korea, where government has been far more successful in this regard than in Singapore. Furthermore, it should be recognised that economic development itself alters comparative advantage. This is the implication of the Rybczynski theorem and, more recently, the idea behind the simile of comparative advantage as a ladder. The now growing importance to Singapore's economy of services, and eagerness of the government to promote them, does not, contrary to Rodan's suggestion, indicate a difficulty in climbing this comparative advantage ladder but success in doing so.

As yet, business historians have been little concerned with the kind of international investment Rodan considers, partly because it is so recent and partly because its place in the international economy cannot yet be assessed. In speculating on the latter issue, Rodan inclines to doubt the future importance of these capital flows. He is probably wrong in this. Just as earlier phases of international investment in response to the availability of natural resources and, latterly, the establishment of import-substituting manufacturing offer major subjects for contemporary business historians, their successors will likely find a rich new topic in the current investment phase. There is an open invitation for business to set up abroad so long as, as at present, the international trading system remains open and compensation levels in a significant part of the developing world are a fraction of those in developed countries but productivity levels similar and host governments anxious to attract foreign enterprise.

University of Durham W.G. HUFF

CALCUTTA

TSUNEHIKO YUI and KEIICHIRO NAKAGAWA (eds.), *Japanese Management in Historical Perspective* (University of Tokyo Press, 1989. Pp.xxii + 290. Yen6,000).

In view of the outstanding success of Japanese industries in export markets worldwide it is not surprising that there should have been international curiosity about the Japanese business management techniques which made this possible.

This volume is the fifteenth in a series reporting the proceedings of the Fuji Conference on business history. Annually, since January 1974 – thanks to the generosity of the Taniguchi Foundation – the Japanese have been able to hold meetings to explore aspects of business history. Each year a select group of foreign scholars are invited to join the Japanese participants. The present book is a valuable enrichment of our understanding of Japanese business history. Readers should note particularly the responses (published here as 'Comments' after each paper) of Japanese business historians to those papers given by foreign scholars. They can be illuminating and helpful.

From 1890 Japan started to produce relatively large numbers of engineering graduates. Many of these men sought and obtained career opportunities in Japanese industries. Several papers in this volume explore the problems of integrating technical experts into the evolving management structure in business in Japan. Professor Sawai examines the development of managerial responsibilities and shows how the roles of foremen and managers related. It is also worth considering Professor Uchida's comments on the distribution of engineers in government service and industry between 1880 and 1920 (pp.106–108).

Andrew Gordon, who develops the theme of Japanese labour relations, here in relation to Araki Toichiro and management consultancy, emphasises the watchwords of 'efficiency and productivity'. Kenji Okuda, as discussant for this paper, mentions the three verities in Japanese business management – 'lifelong employment, [a] seniority based wage system and the in-house union structure' (p.192); but he stresses, as does Professor Gordon, the diversity which characterised Japanese efforts toward evolving an efficient management structure.

The book is handsomely produced. It is possible that the use of two methods of giving Japanese names may cause confusion in the West.

University of Glasgow OLIVE CHECKLAND

K. ODAKA, K. ONO and F. ADACHI, *The Automobile Industry in Japan: A Study of Ancillary Firm Development* (Oxford and Tokyo: Oxford University Press and Kinokuniya Co. Ltd., 1988. Pp.vii + 339. £35).

In the 40 years since the end of the Second World War, the Japanese automobile industry has met with remarkable international success. The existence of ancillary firms, such as component supply companies, has contributed greatly to the competitiveness of Japanese companies in the international market. In this book, which contains seven chapters, the authors examine the history of the Japanese automobile industry, focusing especially on the ancillary components firms from 1900 to 1970. By describing several examples of the histories of ancillary firms, this book traces their establishment, how they developed well organised collaborative relationships with the assemblers, and how they maintained a dynamic vertical division of labour.

In any historical analysis of the automobile industry, it is important to examine the extent to which the part supplier co-operates with the assembler. To strengthen their engineering capability, the Japanese created a strong relationship between these two sectors of the industry. This enabled them to catch up with western technology, by establishing high productivity levels. There are clear contrasts among assembler/supply relationships between the US, Europe and Japan. In the US, for example, the system is vertically integrated, and focuses mainly on in-house parts production. In Europe, by contrast, there is more horizontal division of labour, but no well co-ordinated hierarchical classification of parts supplier firms. Compared with western systems, the Japanese system is more efficient and there is close co-operation between assembler and supplier and a lower in-house parts production ratio.

The book begins with a theoretical statement, which is followed by a brief historical section focusing on technological advances, government policy, licencing and market and managerial factors. In the third chapter, the role of ancillary firms in the development of the Japanese automobile industry is examined. In addition, attention is given to the factors contributing to the growth of the ancillary firms. Chapter 4, by examining the development of Nissan and Toyota, explains the relationship between the primary assembly and the ancillary firms. The fifth chapter is central to the book, and by using available company records and interviews the authors trace the historical development of eight ancillary firms. Divided into three groups – the Toyota group, the Isuzu group and the independent firms – these firms use quite different technology and produce different parts and products. Finally, in the remaining two chapters, the authors present their conclusions with a summary and interpretation of parts procurement practices in the Japanese automobile industry.

This book explains how the Japanese parts supply system has developed, highlighting the strong collaborative efforts between primary assembler and ancillary firms. This stable and close relationship includes the primary firms' support of ancillary firm development and the organising of an association of ancillary firms. The book succeeds in clarifying how the Japanese parts supply system works. It seems that the successful development of ancillary firms was based on policies such as improving quality before making cost reductions, and on the strong leadership of their founders, against a background of support from the primary firms and from government industrial policy. These elements all had a synergistic effect on each other. Until now there have been few studies of the history of the parts supply system in Japan. The factual evidence contained in this book gives firm proof of the special nature of ancillary firms and provides a good combination of history and theory.

This book makes a contribution to the literature and has many merits. It would, however, have been useful had some comparative analysis of the assembler/supplier relationship been provided. In addition, the importance of the role of specific production technology and know how in the supply of parts in a precision timing system was not given enough attention. How the ancillary firms have developed their process technology to produce a high level of quality, while keeping costs low, remains a key issue which should be explored further. Finally we need more details on the collaborative relationship with respect to R and D activities between the primary and ancillary firms.

Hosei University KOICHI SHIMOKAWA

HAROLD DEMETZ, *Ownership, Control, and the Firm: The Organisation of Economic Activity, Volume 1* (Oxford: Basil Blackwell, 1989. Pp.300. £35.00).

This collection, the first of two volumes consists of an autobiographical introductory chapter, 11 articles published in various economics and law journals between 1964 and 1986, and seven new essays. Demetz deliberately avoids industry case studies on the grounds that they do not provide generalisations about economic systems as a whole, and the essays all draw conclusions from economic theory. Throughout, the analysis concentrates on the merits of free markets and private enterprise to yield the most efficient solution to economic and social problems.

In the first section of the book Demetz deals with the operation of private rights, their consequences, and the implications of transaction costs for resolving competing claims. The discussions range across pollution, car accidents, the New York stock exchange, and the standing of 'discriminated-against minorities' in the market place. The book's dominating theme, however, is the theory of the firm. This element surfaces throughout, but is dealt with most directly in eight chapters in the second section. Demetz discusses why firms exist and stresses their function of evaluating and using resources and knowledge efficiently. There is an interesting discussion of the motives for vertical integration, and the economic significance of the division between ownership and control. The collection includes Demetz and Alchian's 1972 essay on 'Production, Information Costs, and Economic Organization'. In general, Demetz emphasises the role of firms as mechanisms for limiting risk and economising on information and knowledge. The final section of three essays considers moral issues under free market systems and speculates on the nature of freedom and social responsibility. Demetz even argues that uneven wealth distribution may be valuable in ensuring a form of the 'survival of the fittest' in terms of taste and consumption. Social institutions are regarded, paradoxically, as not very influential for morality, but potentially highly damaging if they corrupt free markets.

The book is well written, informative and argumentative. It possesses the economic theorist's characteristic mix of elegant analysis based on models and simplifying assumptions which can be so infuriatingly difficult to operationalise. Parts of the book will be of use to business historians given the current interest, especially in assessing multinational enterprise, in applying transaction cost theories and concepts of advantage. Demetz criticises some transaction cost concepts as imprecise, and attaches more importance to internal monitoring of team effort to counter shirking than to the need to prevent opportunism by suppliers and distributors. There is an implication that production management may be more important than vertical integration. The availability of much of the material in article form will deter some purchasers, and the lack of case studies limits the book's teaching applications, but the arguments and analysis are of interest. The early date of some of the articles indicates the business historians' lag in exploring such economic theory. Demetz gives little guidance, however, on whether and how such theory can actually be applied.

University of Glasgow MICHAEL FRENCH

HUMBERTO BARRETO, *The Entrepreneur in Microeconomic Theory: Disappearance and Explanation* (London and New York: Routledge, 1989. Pp.xii + 156. £30.00).

This short book offers a general introduction to the role of entrepreneurship within economic theory. The first chapter reviews the emergence of entrepreneurial theory by examining the classic works of Cantillon, Say, Schumpeter and others. The second chapter examines the disappearance of the entrepreneur from conventional microeconomic theory, chronicling the demise through the work of Walras, Edgeworth, Marshall, J.B. Clark and others. The remaining chapters elaborate on the author's contention that the exclusion of the entrepreneur is simply the consequence of the demands of rigorous mathematical analysis of the firm. He sees a clear conflict between entrepreneurial judgement on the one hand and the use of well specific economic models on the other.

The main thesis of the book is fairly trite and the arguments are developed at exceptional length. The author indirectly apologises in the preface for the lengthy review of the modern theory of the firm which occupies much of chapter 3. Whilst the chronicling of the disappearance of the entrepreneur is interesting, the scholarship is unfortunately incomplete. The author's review of theoretical writing is highly selective and in dealing with some of the greatest figures he frequently seems to miss the main point of their work. Thus, in describing Frank Knight's work he identifies the entrepreneur with the chief executive whereas the gist of Knight's argument is that it is the shareholders and not the salaried employees who fulfil the entrepreneurial role.

There remains an important gap in the literature of economics for a scholarly study of the place of the entrepreneur in eighteenth- and nineteenth-century economic thought. Unfortunately this book provides insufficient information and analysis to fill this gap. It may prove useful to people seeking a quick introduction and historical perspective of the subject, but it is to be hoped that the author will, in due course, produce a more insightful and systematic work.

University of Reading MARK CASSON

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S. WILLIAMS and J. WILLMAN, *Tax Guide, 1989–90* (London: Penguin, 1989. Pp.352. £4.99).

P. VARDY, *Business Morality* (London: Marshall Pickering, 1989. Pp.209. £6.99).

M. POHLE and D. GOLLY-JUNK, *Deutsche Wirtschafts Archiv Band 2: Kreditwirtschaft* (Stuttgart: Franz Steiner, 1988. Pp.577 Np).

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L. MOBLEY and K. MCKEOWN, *Beyond IBM* (London: Penguin, 1989. Pp.xxiii + 253. £4.99).

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W. MOORE, *Schrodinger: Life and Thought* (Cambridge: Cambridge University Press, 1989. Pp.xi + 513. £25).

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Mary B. Rose

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INTERNATIONAL COMPETITION AND STRATEGIC RESPONSE IN THE TEXTILE INDUSTRIES SINCE 1870

By MARY B. ROSE

Demand for clothing as a basic need and the comparative ease with which technology has diffused internationally has helped to place textiles, especially cotton goods, in a central position in the early stages of the industrialisation of many countries.[1] The international spread of factory-based textile industries, which began with the diffusion of cotton spinning and weaving technology from Britain to Europe and America, in the first half of the nineteenth century, has continued ever since. This ready diffusion of technology, and the onset and continued progress of foreign competition, makes the textile industries ideal for the examination of responses to an ever changing competitive environment.

Britain's textile industries were not only the first to develop factory-based production methods; they were also the first to experience sustained but changing foreign competition. This makes them an appropriate focus for this volume. Nevertheless, in considering responses to foreign competition, the resultant business performance and the persistance of competitive advantage, it would be misleading and, indeed, misguided, to consider British experience in isolation, or without an international dimension. The most effective and sustained challenge to British pre-eminence in cotton textiles came from Japan in the inter-war period. It would seem that Japan's success in this sphere was a portent of her later, more wide ranging, international industrial and economic prowess. This makes the emergence of the Japanese threat to UK cotton textiles, the sources of her competitive advantage, and perceptions of and responses to Japanese competition in Lancashire, which are well reflected in the essays which follow, of particular interest.

It is well known that whilst the textile industries played a pivotal role in the early industrialisation of advanced economies, the position of these industries declines in relative importance as economies mature. The comparative decline of such industries is not least a result of the relatively low income elasticity of demand for textiles in general, so that as real incomes rise, both nationally and internationally, overall demand for yarn and cloth increases less than proportionately. In addition, as Kuznets has observed, 'a rapidly developing industry does not retain its vigorous growth forever, but slackens and is overtaken by others, whose rapid period of development is beginning'.[2] Rates of growth of output and employment in textiles are, therefore, faster in the developing than in the industrialised world.[3]

The product life cycle approach to international trade, by emphasising the dynamic nature of comparative advantage,[4] does provide some insights into the spread of manufacturing internationally, and the likely consequences of this. It suggests that in the production of a given good, a country might enjoy initial export prowess, but that foreign competition will eventually erode first export and then domestic markets.[5] That this trade cycle may be modified by design and quality changes, in line with the greater wealth and sophistication of the home and some export markets, as industrialisation progresses, is also embraced.[6] Similarly, it is recognised that in the face of such a cycle, firms are likely to diversify their production and transfer a proportion of their manufacturing overseas, to exploit lower labour costs and avoid tariffs.[7] In describing broad general trends, the theory of the product life cycle is useful. There has, for example, been a prolonged expansion of low labour cost textiles in the developing world and a rise in foreign direct investment by large textile firms. Similarly, in many advanced economies, the most successful strategy, in the face of growing low labour cost competition, has been for firms to shift to higher value-added fabrics in home furnishing and fashion ranges. It is striking, however, that recent research (including the article in this volume by Mass and Lazonick) has shown that, because competitive advantage depends upon more than low relative labour costs, advanced textile producers often maintain their advantage long after the rise of competitors in developing countries.[8] Mass and Lazonick's observations for the period before 1914 are undoubtedly confirmed by experience in the late twentieth century. Thus, as late as the mid-1980s, world textile production remained concentrated in the advanced economies of the United States, Western Europe and Japan, even if there are more recent signs that such domination is declining in favour of Hong Kong, South Korea and Taiwan.[9] At least as important, in the context of business history, is the failure of product cycle theory to capture the wide variations in competitive performance of industries and firms in countries with similar production costs and at broadly equivalent stages of development. It does not, for instance, explain why the British textile industries have performed so poorly since the 1960s, when European competitors such as West Germany have flourished.[10] The indifferent showing of the UK textile industries cannot, therefore, be expained away by the inexorable force of the product cycle. It is true that competition is an inevitable consequence of industrialisation. To conclude, however, that businessmen in Britain were trapped by the onward march of economic progress and the shifting sands of international comparative advantage is to deny the creative element of entrepreneurship, central to the Schumpeterian concept. The contrasts in performance, not only internationally, but between UK sectors and firms, illustrate the potential for a creative and effective response to foreign competition. That is not to say that the process of response to competitive pressure is easy; indeed, the numerous inquiries into the ills of the cotton industry bear witness to the difficulty. Numerous constraints on the supply side affected the responses and freedom of movement of businessmen, whilst perceptions – perhaps misplaced – of the degree and nature of competitive threats, could be sufficiently pessimistic to seriously hinder change.

The British cotton industry was, throughout the nineteenth century, heavily export-orientated. Moreover, textiles in general and cotton yarn and goods in particular represented a significant share of the UK's total exports. Table 1 traces the erosion of Britain's dominance in world cotton textile markets and the meteoric rise of Japan. Britain's position declined from a position of pre-eminence in world markets in the late nineteenth century until 1970, when she ranked eighth as an exporter of cotton cloth. By that time she not only stood behind Japan, Hong Kong, the USA and India, but had been overtaken by West Germany, France and the Netherlands, her main European competitors.[11] Even allowing for the shift towards man-made fibres, which helped to account for a decline in UK cotton cloth output, UK exports of non-cotton woven textiles, as a share of world exports, was a modest 8.42 per cent in 1971, falling to 5.9 per cent by 1979, though the UK remained the sixth largest exporter. Nevertheless, in 1978 she became a net importer of non-cotton cloth.[12] The British textile industries have, therefore, over the last century and especially since 1910, faced changing competitive pressures, first in export markets, but more recently as a result of import penetration. Few would dispute that some decline in Britain's share of world trade in textiles was merely the result of the international spread of factory-based textiles. What is perhaps more telling is that the decline in UK cotton cloth exports was far faster than either the United States or Europe, between 1950 and 1964.[13] It was not, however, only in the export of textiles, that Britain experienced falling market share. Since 1945 she has also experienced growing import penetration, not only from low labour cost economies such as India, Pakistan and Hong Kong, but also increasingly from Western Europe.[14] The position of the British

TABLE 1

SHARES IN WORLD EXPORTS OF COTTON PIECE GOODS BY MAIN PRODUCERS, 1882–1955 (%)

	UK	Europe	USA	India	Japan
1882–84	82.0	14.3	2.8	0.9	–
1910–13	70.0	20.0	4.2	1.0	2.1
1926–28	46.1	27.1	6.3	2.0	16.3
1936–38	26.9	21.5	3.9	3.1	38.9
1949	19.7	31.4	19.3	10.1	16.2
1955	11.8	28.8	11.5	16.3	24.2

Source: R. Robson, *The Cotton Industry in Britain* (1957), pp.4, 22.

cotton industry was progressively undermined, in low quality markets in the inter-war period where Japanese competition was most potent. This continued during the 1950s and 1960s, when cost competition came from late developers. The erosion of the position of British textile producers was not confined to cheaper low quality textiles, but also to those high quality sophisticated cotton and man-made fabrics where British producers ought to have enjoyed a comparative advantage, and for which demand has grown since 1945.[15]

When considering business performance it is not enough simply to consider the impact of the emergence of new manufacturing capacity. Consideration of the demand conditions faced by producers is equally important. It is clear, for example, that in the inter-war period not only did manufacturers face growing foreign competition, but also that world depression and rising levels of protection meant that overseas markets for textiles were stagnant or shrinking. There was in addition inadequate compensatory growth in the home market.[16] It is clear that such dismal demand conditions not only contributed to the sustained decline in textile capacity, but also hampered the potential of entrepreneurs to respond creatively. In the period since 1945, however, the position is less clear. Overall there was far greater potential for the growth of demand at home and abroad, yet it is clear that this did not lie in Britain's traditional markets or for the traditional output of the UK industry.[17]

Firms encountering foreign competition are faced with a range of options, choice being dependent upon such variables as their existing structure and orientation, the institutional environment and prevailing expectations. These options include horizontal integration to facilitate the rationalisation of production, and vertical integration to allow for the exploitation of economies of scale. Alternatively and more usually, firms may combine horizontal mergers with collusion, using trade associations as defensive devices against the rigours of international competition. Similarly, dependent upon the political power of groups of businessmen, pressure may be brought to bear on governments for the introduction of tariffs, whilst negotiations with competing, low cost, often protected producers may also be initiated. The scrapping of surplus capacity, either at the level of the individual firm, or across an industry, as the result of government or industry-wide intervention, with accompanying losses of employment, also usually follows the onset of competitive pressure. If this is also accompanied by the introduction of new, more advanced technology, the resultant productivity gain may avoid loss of output, whilst at the same time providing the basis of effective price competition. Further cost reductions can be effected by the quest for and utilisation of new and cheaper sources of raw materials. The search for cheaper raw materials and labour, in response to growing pressure from low cost producers, may also lead larger firms to extend their activities overseas.

The development of new products represents a creative response to the growth of competition in an existing good. This may be within an existing product range and often partly as a consequence of new technology, or it may be in a related sphere and thus represent diversification. Additionally, low cost competitive pressure may signal a shifting of emphasis away from standardised goods to high quality goods, the success of which is less dependent on price than on design. An important consequence of such a shift in emphasis, is often the development of more advanced marketing techniques and greater market awareness by producers. Success, rather than survival, in an increasingly competitive world depends, however, not so much upon reaction to existing market pressures as upon an ability to anticipate likely future trends and by the creation and exploitation of market niches.

Few topics have generated more debate than the relatively poor competitive performance of Britain's staple industries in general and of the cotton industry in particular. Interpretations range from the condemnation of British entrepreneurs for their tardy adoption of new technology, modern corporate organisation and adventurous marketing techniques at the one extreme,[18] to their comparative exoneration on the grounds of economic rationality at the other.[19] Alternatively, it has been argued that whilst there was clear evidence of entrepreneurial failure, businessmen were constrained in their responses by a range of institutional rigidities which were exacerbated by the behaviour of the banks. Such rigidity it has been argued could only have been relieved by energetic state intervention.[20]

The articles in this volume not only contribute to this general debate but, by examining sources of competitive advantage and perceptions of competitive threats, widen it considerably. In addition the focus is not confined merely to cotton, but also embraces wool, textile machine-making and textile merchanting. The intention is less to convey a unity of approach and interpretation than to highlight diversity, whilst also emphasising common themes.

The continuing debate, concerning the performance of the British cotton industry since 1870, is surveyed in the essay by Mass and Lazonick. This article, however, by analysing in depth the sources of competitive advantage enjoyed by the UK industry before 1914 and the Japanese industry during the inter-war period, provides a new dimension. The response of the British industry to the Japanese threat is thus considered in the light of the constraints placed upon it by the sources of earlier success. Complementary to this article is the piece by Robertson which examines inter-war perceptions of the Japanese threat, especially in Far Eastern markets. He shows that there was considerable complacency in Lancashire concerning the power of Japanese competition, a complacency which persisted largely unshaken until 1930. He also demonstrates that once the threat was realised, response in Lancashire was defensive rather than offensive.

Emphasis was laid on seeking voluntary limitations on Japanese exports to British Dominion and colonial markets, rather than on effective price competition.

Again in the sphere of competitive advantage, Jenkins and Malin examine the maintenance of market share by the Yorkshire woollen industry, despite foreign competition from European producers. This success they attribute to the skilful use of cheap raw materials, in the shape of recovered wool.

The two articles by Dupree and Singleton, which respectively consider the behaviour of the Cotton Board, from its foundation in 1940 until 1959, and the decline of the cotton industry from 1945 to 1965, can also be considered as complementary, though their conclusions are different. Dupree shows that although there was concern over a resurgent Japanese threat in export markets in a world of liberalised trade, there was cautious optimism for the future of the industry within the Cotton Board into the early 1950s. This faith was based on confidence in trade restriction negotiations reminiscent of those discussed in Robertson's paper on the inter-war period. She goes on to show, however, that hopes of a renaissance were dashed by the emergence of cheap duty-free imports from the Commonwealth at a time of unbending free trade policy by the government. Singleton on the other hand detects an underlying pessimism among industrialists, which he attributes to the chastening experience of inter-war Japanese competition. One is left with the sense of an industry overwhelmed by the threat of cheap imports and lacking the will or the resources to effect any form of creative response before 1960. Thus, not only did industrial structure and the sources of earlier competitive advantage militate against change, but over-riding pessimism about future prospects removed the necessary drive.

In examining the performance of the British textile machine-making industry in world markets from 1870 to 1960, Farnie offers a new perspective. He shows the high degree to which textile machine-making was export-orientated and the significant contribution the sector made to Britain's favourable balance of trade in manufactures. Like the textile industries, textile machine-making was not immune to competition, especially in the inter-war period which, combined with the collapse of export markets in 1929, led to the establishment of Textile Machine Makers Ltd., an amalgamation of six machine-makers. Farnie goes on to analyse the performance of this merged company and the problems of the industry since 1945.

In the final article in the volume, which surveys the period between 1880 and 1990, Chapman examines the decline and rise of textile merchanting. He demonstrates that from a position of dominance in the late ninteenth century, London and Manchester textile merchants crumbled in the face of growing foreign and domestic pressures in the inter-war years. Taken in the European and American setting, it appears that the most potent factor was the precocious development of the great

British chain store groups, which concentrated on long runs of cheaper clothing and thus diverted their satellite producers from branded and more fashion-conscious products.[21] Since the 1960s, however, there has been a resurgence in merchanting, principally by manufacturers engaged in offshore processing.

A number of common themes emerge from these studies, including the decline, albeit initially surprisingly protracted, of the world dominance of British textiles and the increasing preoccupation with Japanese competition. More than anything though, these essays highlight the difficulty of achieving fundamental changes in technology, industrial structure and product, in the British textile industries in general and in cotton in particular. The process of change was a long and protacted one, in a world where competitive forces were changing at a rapid rate. Nevertheless, the very diversity of strategies and experience, at the level of the firm, highlights the complexity of the process of change.

University of Lancaster

NOTES

Thanks are due to Dr Geoff Jones and Dr Maurice Kirby for their advice in preparing this Special Issue and to numerous anonymous referees.

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THE BRITISH COTTON INDUSTRY AND INTERNATIONAL COMPETITIVE ADVANTAGE: THE STATE OF THE DEBATES

By WILLIAM MASS and WILLIAM LAZONICK

The case of the cotton industry has figured prominently in recent debates over Britain's loss of industrial leadership in the twentieth century.[1] As participants in these debates, our purposes here are to clarify our own arguments concerning the sources of British dominance and decline in international competition for cotton textile markets, and to consider how other perspectives on the determinants of economic performance in this industry differ from ours. In doing so, we want to show the importance of dynamic theories of competitive advantage and economic development for analysing the process of economic change.

Our approach focuses on the relation between nation-specific institutional structures and shifts in international competitive advantage over the past century. We stress the impacts of institutional structures in different national economies on the abilities and incentives of economic actors to *develop and utilise* the productive resources that they control. We then seek to explain why the development and utilisation of productive resources gave a particular national economy sustained competitive advantages over its international rivals in one era and why, in a later era under altered conditions, these competitive advantages could not be be sustained. In cotton textiles, the outstanding cases of sustained competitive advantage in international competition are Britain up to World War I and Japan in the inter-war period.

We do not have the space here to elaborate the theories of competitive advantage and economic development that we apply to the analysis of international competition in cotton textiles.[2] But some key conceptual definitions that enter into our analysis are in order. The development of productive resources – both human and physical – occurs when a given amount of useful output can be produced with a smaller quantity of human effort than was previously possible. Hence we define economic development in terms of the relation between necessary labour and the useful goods and services that labour produces. We view this effort-saving impact of the development process as the distinctive way in which technological change makes possible higher standards of living. With effort-saving technological change, a given amount of human effort produces more goods and services of a given quality.

The development of productive resources does not, however, result in higher standards of living unless these resources are utilised. Indeed, when productive resources that have been developed go unutilised, living standards may be lowered (because resources have been wasted) rather than raised. Conversely, the more the productive resources that have been developed are utilised, the more the enhanced productive potential of these developed resources are realised, and the more possible it becomes to sell the resultant outputs on competitive markets without a deterioration in living standards.

In focusing our analyses of international competitive advantage on the development and utilisation of productive resources, we do not deny that factor prices and government policy (in particular tariff protection) can have impacts on competition for markets. Low wages and protected markets have often been critical conditions for the entry of new competitors into international competition. In our view, however, the development and utilisation of productive resources enable a national economy to become a *major* competitor on international markets – to experience *sustained* competitive advantage.

In the case of the evolution of international competition in cotton textiles, we ask how particular modes of developing and utilising productive resources permitted a national industry that emerged as dominant to cut unit costs for a given quality of useful product in ways that were unavailable to its rivals. More specifically: (1) How during the nineteenth century did the British cotton industry develop and utilise its productive resources in ways that gave it sustained competitive advantages over the cotton industries of other national economies? (2) How did the British cotton industry manage to dominate international markets until the eve of World War I? (3) How during the inter-war period did Japan gain sustained competitive advantage over the once-dominant British producers? (4) Why did the British cotton industry experience such great difficulty in responding to the Japanese challenge?

I

Sources of Britain's Competitive Advantage

Britain's nineteenth-century competitive advantages derived from the concentration of the industry in Lancashire and from the modes of labour management within the industry's constituent firms. We discuss the sources of Britain's competitive advantages under the following five headings: (1) labour costs, (2) fixed capital costs, (3) materials costs, (4) marketing costs, and (5) administrative costs. In each case, we point to the unique capabilities of the British cotton industry for developing and utilising its productive resources. As much as possible, we indicate how these sources of competitive advantage were dynamically interrelated, the realisation of one source of competitive advantage making possible the realisation of another source. For, as we shall make clear in this essay, we view sustained competitive advantage as a cumulative and continuous process in which the development and utilisation of a number of key productive factors reinforce each other.

(1) *Labour costs*

During the nineteenth century, the development and utilisation of labour resources provided the British cotton industry with its unique sources of competitive advantage. The major machine technologies of the nineteenth century required complementary applications of experienced human labour to keep them in motion. Experience gave workers not only specific cognitive skills (of which a process such as mule spinning was much more demanding than a process such as plain weaving), but also (and more important over the long run) the general capability to work long hours at a steady pace without damaging the quality of the product, the materials, or the machines.

These general capabilities manifested themselves as an 'habituation to factory work' on the part of the labour force of Lancashire, where over the course of the nineteenth century the cotton industry became increasingly concentrated. Yet the accumulation of experience did not in and of itself ensure that workers would supply the high levels of effort that ensured high levels of utilisation of both their own labour and the employer's plant and equipment. A major problem in the British Industrial Revolution was the creation of a disciplined factory labour force.[3]

During the first half of the nineteenth century the British cotton factory benefited from the accumulation of experienced workers in domestic industry. Early in the century mule spinners came into the factory from domestic industry and craft pursuits with considerable industrial skills. They were willing to take up factory employment because of the relatively high wages offered as well as the considerable control they retained in the factory setting over the organisation of work and the recruitment, training, and supervision of other workers. Older handloom weavers may have resisted entry into the factory, but younger workers from the seats of domestic industry in northwest Lancashire brought their already acquired skills into the weaving mills in the middle decades of the nineteenth century.[4]

Besides the general habituation to factory work that came from growing up in factory communities and entering the mills at a young age, cotton workers developed specialised skills in spinning particular types of yarn and weaving particular types of cloth. The growth of abundant, locally concentrated supplies of experienced factory labour with specialised skills led to a growing localisation of industry – coarser yarns in Oldham, finer yarns in Bolton, coarser cloths in Burnley and Blackburn, finer cloths in Nelson and Colne. Once the process of localisation began it was reinforced by the tendency for specialised workers to remain in the spinning and weaving centres that demanded their particular skills. Localisation was also reinforced by the emergence of supplies of skilled mechanics, their engineering capabilities geared particularly toward servicing the needs of the specialised machinery that dominated the locality.[5] By the second half of the nineteenth century, employers who chose to locate outside the main centres of specialised production either had to develop the requisite supplies of specialised labour themselves (with the distinct possibility that these specialised workers would ultimately migrate to the manufacturing centres in which their skills were in most demand) or forgo the productivity advantages of having ready at hand a large supply of experienced and specialised labour. Increasingly, employers who located in the specialised centres within Lancashire had distinct competitive advantages over those British employers who did not.

During the generally prosperous conditions of the third quarter of the nineteenth century, the reliance of cotton firms on experienced and specialised workers, concentrated in certain localities and attached to their communities, provided foundations for the emergence of strong and enduring trade unions in both spinning and weaving. The unions helped workers to keep up wages in the face of generally abundant labour supplies. But relatively high wages in the main spinning and weaving centres were offset by the productive benefits that employers derived from making use of this more experienced and more specialised labour. Trade union influence in the determination of conditions of work and pay gave workers the confidence to expend high levels of effort without the fear that employers would be able to cut piece rates as earnings increased. Those employers who adhered to union wage-lists found that they had industrial peace and co-operative workers, especially during the booms when there were profits to be made. During slumps the unions helped to enforce organised short-time working, which dampened the decline in the price of a textile centre's specialised product and alleviated the pressure on employers to cut wages.

The industrial relations structures encouraged the technical improvement of the machine technologies. During the last half of the nineteenth century, the most dynamic cotton centres – Oldham and Bolton in spinning, Burnley and Nelson in weaving – were districts where the distribution of value gains inherent in the collective agreements gave workers an interest in working harder for the sake of more pay and employers an interest in making improvements to their plant and equipment for the sake of higher returns. The results were investments in improved spinning mules and power-looms that permitted higher levels of capital per unit of labour and higher levels of output per unit of capital without *necessarily* requiring workers to expend more effort.

Yet as the potential productivity of the machines increased during the last half of the nineteenth century, workers often responded by supplying more effort, thereby achieving even higher levels of labour productivity. Senior workers (minders on the self-acting mules and weavers on the power-looms) had incentives to work harder because their union power ensured that more effort would result in more earnings. Moreover, because of their habituation to factory work, they had (up to a point) the ability to work harder without an offsetting deterioration in product quality. At the same time, the senior workers were often able to drive their junior workers (piecers in spinning and tenters in weaving) to exert more effort because these assistants were dependent on the senior workers for continued employment. Over time, moreover, the exertion of more *effort* by the cotton workers generated a new *skill* – the endurance that permitted the higher level of productivity without necessarily experiencing it as a higher level of effort.[6]

With workers trained at a young age and at low pay on the job, and with the acceptance of factory work permeating the communities in which they grew up, the development of this highly productive work force occurred in Lancashire at a very low cost to employers or the industry as a whole. Moreover, the habituation to factory work combined with the union-protected assurance of rewards for harder work meant that once junior workers had became senior workers the costs of supervising and disciplining them were low. Where and when it was needed, an abundant supply of supervisory labour could be drawn from the ranks of those workers who had over the years demonstrated the ability to lead on the shop floor and a willingness to co-operate with management. Shop-floor supervision was made all the more effective and all the less costly by industrial relations structures that permitted workers to redress grievances by calling in the district secretary rather than by engaging in continuous shop-floor conflict.

By the 1870s cotton industries around the world could readily purchase British plant and equipment and even British engineering expertise. But no other cotton industry in the world could readily acquire Britain's highly productive labour force; no other industry in the world had gone through the century-long developmental process that had produced the experienced, specialised, and co-operative labour force that Britain possessed.[7]

(2) *Fixed capital costs*

The growth of the British cotton industry generated vertically related industries, also concentrated in Lancashire, for the building of cotton mills and machinery. The growth of these capital goods industries meant that the initial development of mill and machine design was geared toward the technological requirements of Lancashire, particularly the complementary capabilities of its labour supplies and Lancashire's peculiar advantages in cotton utilisation. Because the industry was so entrenched in Lancashire, because Lancashire was so dominant in the world economy, and because local labour supplies with specialised skills were so abundant, Lancashire spinning and weaving firms were willing to buy machines that were built to last. As a result, equipment could be used for decades on end, with the engineering industry developing improvements to be used on existing machines with existing labour supplies.

Nevertheless, the engineering industry was responsive to the need for technical change, whether the demand came from within Lancashire or from abroad. During the American Civil War, the engineering industry rapidly adapted mule spinning technology to permit the Lancashire cotton industry to shift (temporarily as it turned out) from scarce, longer staple American cotton to the more abundant, shorter staple Indian cotton. In the 1880s, the textile engineering industry was also quick to take up the manufacture of ring spinning – an American innovation – and almost immediately dominated in exporting these machines around the world.[8]

The cost of transporting machines (along with the men to build the mills and set up the equipment) around the world gave the Lancashire cotton industry a one-shot cost advantage over purchasers abroad. More important in giving Britain a continuing competitive advantage was the ready availability in Lancashire of skilled mechanics and parts to keep the machines in motion on a day-to-day basis as well as to prolong the useful life of the equipment. Indeed to a certain extent the requisite mechanical ability was readily available within each cotton firm on the shop floor because the long-term attachment of workers to the industry, and indeed to particular machines in particular firms, gave many skilled workers the practical expertise to minimise the downtime caused by malfunctioning equipment that went unserviced. The results were high levels of utilisation of the productive capabilities of both labour and installed plant and equipment.

(3) *Materials costs*

As the most expensive input in the production of yarn and cloth, the cost of raw cotton could be of critical importance as a determinant of competitive advantage. The Lancashire industry's peculiar advantage in the cost of cotton derived from its ready access to Liverpool. During the nineteenth century, in response to the growth of the British cotton industry, Liverpool evolved into the world's leading and most highly concentrated cotton exchange, not only supplying cotton to Lancashire but also re-exporting some of it to Europe, Africa, and the Middle East. Compared with those foreign cotton industries that found it less expensive to secure their cotton from Liverpool rather than directly from the source (as for example the Germans began to do with Indian cotton from the 1880s), Lancashire spinners had a cost advantage.[9]

After the building of the Manchester–Liverpool railway in 1830, Lancashire's spinning firms were able to secure cotton from Liverpool as it was needed. Over the middle decades of the century access of spinning managers to Liverpool was further enhanced by the building of railway connections between Manchester and the major cotton towns (an infrastructural investment that further reinforced the specialised localisation of the industry). The growth of the spinning industry spread out the costs of the communications infrastructure for buying and shipping cotton within Lancashire, thus reducing the unit costs incurred by individual Lancashire firms in securing their required cotton.

The ready availability of cotton on the Liverpool market meant that spinning firms avoided the warehousing of large stocks of cotton, as was the case in most other countries. But, except for possible economies of scale inherent in having the cotton warehoused with the broker rather than with each firm, the cost of warehousing the cotton still had to be incurred somewhere between harvest and usage, and ultimately had to be paid for by the spinning firm.

Rather, the main advantages that the Liverpool market conferred on Lancashire lay in the flexibility that it provided to spinning firms in keeping their plant, equipment, and labour utilised by accepting orders requiring the use of different grades and staples of cotton. Lancashire firms adjusted, within limits, and often with considerable cotton cost savings, the grade and staple of cotton utilised to produce a particular yarn in response to changes in the relative prices of grades and staples of the raw cotton. The ability to take advantage of this flexibility in cotton utilisation depended on the skills of the Lancashire labour force. A prime skill of a spinning mill manager (or his agent), whose function it was to purchase cotton in Liverpool on a week-to-week basis, was his ability to buy the grades and staples of cotton that would minimise the cost of yarn production, given the productive capabilities of his machinery and his labour force. In turn, a prime skill of his shop-floor labour force – both overseers and minders – was to reset the spinning machinery to make use of different qualities of cotton without yarn breakages becoming excessive. Indeed, from the 1880s, when ring spinning became a viable technology, a major advantage of the mule spinning technology was its flexibility in using cotton of lower grade and shorter staple to produce a given count of yarn. So too, when in the mid-1890s the automatic loom became a viable technology, a major advantage of the Lancashire power-loom was its flexibility in using inferior yarn – that is, break-prone yarn made from cotton of lower grade and shorter staple.

The flexibility of the mule and power-loom in using inferior cotton inputs, along with the accumulated experience of the workforce in adapting to the use of these inputs, meant that the Lancashire industry had a unique technological capability for producing for virtually any market in the world. Indeed, through the use of inferior cotton, the industry had, within limits, the capability of adjusting the cost of production to the income constraints of buyers, thus permitting the British industry to increase its extent of the market in low-income areas of the world.[10]

(4) *Marketing costs*

In the mid-nineteenth century, cotton yarn and cloth accounted for about 40 per cent of all UK exports. In 1900 the British cotton industry still accounted for 26 per cent of UK exports, this share declining by only two per cent over the next decade. Over the last half of the nineteenth century, as the weight of cotton consumed in the UK almost tripled, the cotton industry became increasingly export-oriented, with exports making up about 60 per cent of the value of the industry's product at mid-century and just under 80 per cent at the end of the century.[11]

The British cotton industry was exporting cloth to all parts of the world, with India as its largest market. The goods did not sell themselves. Besides the transportation infrastructure needed to move yarn and cloth from the various specialised cotton towns to destinations in all corners of the globe, the industry required information concerning the types of yarns and cloths that buyers in the various markets around the world desired and could afford. The early 1870s saw the completion of a worldwide network of cables emanating from Manchester, and the early 1880s saw this communications network augmented by the telephone. Unique to Lancashire was its position as the hub of not only a worldwide transportation system but also a worldwide information system.[12]

Like the Liverpool cotton market, this worldwide marketing structure developed during the nineteenth century with the growth of Lancashire as the world's centre for the spinning of yarn and the weaving of cloth. Foreign merchants, desirous of profiting from the trade in Lancashire textiles, set up offices and warehouses in Manchester, while British merchants gravitated to Manchester and sent commission agents abroad. In Manchester the merchant would receive information from the particular foreign market that he served concerning the quality and price of yarn and cloth demanded in those markets. This information had to be updated on a regular basis because of changes in fashion and disposable income in the particular foreign market.

On receipt of an order, the merchant would purchase cloth from weavers or yarn from spinners, and, if required, have it finished (or 'converted') according to the specifications of the order. Alternatively, in the case of the more standard products, he might buy the desired finished goods from other merchant-converters or directly from finishers. Increasingly from 1809 these transactions, along with the sale of yarn from spinners to weavers, were conducted twice weekly on the Manchester Royal Exchange, with an internal transportation system evolving to carry spinning and weaving managers from the cotton towns to Manchester to receive orders and then yarn and cloth to Manchester when the orders had been completed. Servicing the merchant-converters was a capital-intensive and increasingly concentrated finishing industry, vertically specialised from the manufacturing of yarn and cloth as well as the marketing of the finished goods.[13]

With this marketing structure in place in the last half of the nineteenth century, no other country could match the ready access of the Lancashire cotton industry to (save for the impediment of tariff barriers) the full extent of the world market. The Lancashire industry had the capability to deliver relatively quickly whatever type of product the customer demanded. The practice of production to order combined with rapid delivery of products to distant markets meant low inventory costs. Moreover, the very extent of the market that became accessible to Lancashire through the development of this marketing infrastructure made the workshop of the world all the more capable of generating the products customers demanded at prices they could afford. For once this transportation and communications infrastructure was in place, every increase in the extent of the market helped to spread out the fixed costs of the infrastructure over more output, thereby driving down unit costs. These were the scale economies, largely external to the spinning and weaving firms but more internal to the more capital-intensive finishing firms, that were central to Alfred Marshall's understanding of nineteenth-century British economic development.[14] When demand was strong, moreover, the very size of the market enabled spinning and weaving firms to accept orders (even if from a number of merchants) for a restricted range of yarns and cloths that gave the producers the benefit of long runs and augmented their internal economies of scale.

These economies of scale could be, and through competitive pressures were, passed on to the consumers of yarn and cloth in the form of lower product prices, thus dynamically increasing the extent of Lancashire's markets and lowering further unit costs. Within Lancashire, meanwhile, supply-side responses to the growth of the market ensured that, as industry output grew, economies of scale would not be transformed into diseconomies of scale. The very prosperity of Lancashire combined with its concentration of engineering capability meant that new capacity could be and (particularly with the advent of limited liability in the late 1850s) was put in place to respond to the rapid growth of demand.[15] The increased demand for spinning and weaving labour was met by the employment of an abundant supply of 'apprenticed' young men and (especially in weaving) women who in turn expanded the corps of operatives charged with recruiting and training the next generation of workers. And when cotton was in short supply, Lancashire was least affected, not only because it harboured the cotton market of the world, but because its experienced workers and flexible machine technologies enabled its spinning and weaving firms to make use of inferior cotton.

(5) *Administrative costs*

As the British cotton industry became more export-oriented and as overseas marketing became a highly specialised function, the production processes became more vertically specialised as well. Up to the mid-nineteenth century, the tendency had been for firms to combine both spinning and weaving. Even before the widespread diffusion of the power-loom in the 1830s and 1840s, many spinning firms operated their own putting-out operations. The steady expansion of yarn exports from the 1820s meant not only that combined firms turned to producing some yarn for sale but also that increasingly it became a viable proposition to set up a specialised spinning firm. A growing supply of marketed yarn in turn encouraged investment in specialised weaving firms, a tendency that was reinforced by the localisation of the cotton industry, fostered as it was by the development of specialised weaving labour supplies in the old hand-loom centres of northwest Lancashire and the completion of the internal transportation network that linked the north-west power-loom centres with the south-east spinning centres. As a proportion of employees and capacity, the combined firms declined in relative importance over the course of the last half of the nineteenth century and indeed throughout the first half of the twentieth century.[16]

As the British cotton industry became more vertically specialised, it also became more horizontally fragmented, because the well developed input and output markets reduced the amount of financial resources and the array of managerial skills required to participate in the industry. Compared to the more vertically integrated enterprise structures in cotton industries abroad – industries that lacked Lancashire's unique institutions for the buying and selling of raw materials and intermediate products – the Lancashire industry economised on administrative expenses. The low cost of internal enterprise organisation in Lancashire was reinforced by the institutions of industrial relations (already discussed) that generated a self-disciplined operative labour force requiring relatively little direct supervision.

With little in the way of managerial organisation internal to individual enterprises, and (the other side of the same coin) with the industry highly reliant on markets to co-ordinate the transformation of purchased raw materials into sold outputs, the economies of scale that Lancashire cotton textiles achieved through capturing a large extent of the market in the last half of the nineteenth century were external rather than internal to its constituent spinning and weaving firms. For those who believe that market co-ordination and successful capitalist development go hand in hand, no better example can be found than the British cotton industry of the late nineteenth century. Indeed, in 1919, Alfred Marshall described the Lancashire cotton industry as 'perhaps the best present instance of concentrated organisation mainly automatic'.[17] Unfortunately, as we shall see, as Marshall committed these words to print, the automatic market mechanism was breaking down in the face of planned co-ordination of the specialised division of labour abroad – and particularly in Japan – that would over the following decades eliminate the competitive advantages that the market co-ordinated Lancashire industry had inherited from its nineteenth-century era of international dominance.

II

Alternative Perspectives on British Dominance

The summary of our perspective on the sources of Britain's competitive advantage is consistent with the accounts of historians of the British cotton industry. Of particular value is the work of D.A. Farnie, whose historical argument is cast in an explicitly developmental perspective, with a concern for identifying the sources of Lancashire's unique competitive advantages in the late nineteenth century.[18] Over the past 25 years, however, not all the contributors to the analysis of the performance of the British cotton industry have approached the issue in dynamic, developmental terms. The 'new' economic historians, their academic roots more in economics than in history, have made the issue of British economic performance in the decades before World War I a centrepiece of their attack on the theoretical and empirical imprecision of an older-style economic history that had its roots more in history than in economics.

Trained as economists ourselves, we applaud the new economic historians' concern with the integration of theory and history and their attempts to derive quantitative estimates of the relative impacts of the phenomena under study. But, for us, a coherent perspective of the dynamic interaction of institutions and technology in generating economic outcomes is of more fundamental importance for economic analysis. It is just such a perspective that Anglo-American economists who choose to do economic history generally lack. The problem with the new economic history is that, insofar as the statistical arguments possess any theoretical structure at all, it is *neo-classical* economic history. Trained in the static methodology of neoclassical economics, the new economic historians have sought to analyse the process of historical change without any well-defined conception of the dynamics of economic development.

The new economic historian who has researched the British cotton industry in most detail is Lars Sandberg. But his 1974 book, *Lancashire in Decline*, contains only a two-page statistical overview of the growth of the industry in the nineteenth century.[19] Sandberg did not raise the issue of why the British industry rose to international economic dominance. Rather he began his analysis with the issue of choice of technology and alleged entrepreneurial failure after 1880, a debate that we shall take up later.

Gary Saxonhouse and Gavin Wright have used data on Britain's textile machinery exports of ring-frames and mules in an attempt to examine 'the global experience of the cotton textile industry' from 1870 to 1920.[20] They did not ask why Britain was so dominant in the industry at the starting date, and indeed focused their own research on the logic of technological choice rather than on the sources of competitive advantage. But they did cite as important two sources of Britain's competitive advantage – the utilisation of cotton inputs and the industry's marketing structure – that are prominent in our account.[21] We shall return to the implications of the persistence of these competitive advantages in Britain before World War I for the longer run competitive position of the British industry as well as for the ongoing debate over these issues between Lazonick and Mass on the one hand and Saxonhouse and Wright on the other.

More recently, Gregory Clark, a newer 'new' economic historian, has used the case of cotton textiles to ask the ambitious question, 'Why Isn't the Whole World Developed?', with his search for some answers focused on the relative productivity and factor costs in cotton textile industries around the world circa 1910. Pointing to 50 per cent increases in both the number of looms per weaver and the speed per loom in British cloth manufacture between 1850 and 1906, as well as to a 145 per cent increase in spindles per spinning operative and a more than 100 per cent increase in the speed per spindle on mules, Clark's only attempt to explain the international dominance of the British industry during the nineteenth century was to argue that 'labor intensification could . . . be an important source of productivity increases'.[22] We shall also return to a consideration of Clark's focus on labour intensity as the source of Britain's competitive advantage just prior to World War I.

The case of the British cotton industry has been used as a rhetorical example in a more general neoclassical explanation of British nineteenth-century economic success. In a survey of 'econometric history', Donald McCloskey took issue with 'the common argument that rising output of, say, the British cotton textile industry from 1815 to 1860 "spread fixed costs over a larger output and therefore reduced costs per unit"'. McCloskey went on to argue that the problem with the economies of scale argument is that 'it takes as given and unalterable the institutional fact of the number of cotton textile firms', but that 'growing output causes in the normal course of events a growing number of firms'. In an industry with a high degree of horizontal competition as was the case with British cotton textiles in the nineteenth century, existing firms can sell all that they can produce – 'the size of the market was not a constraint on an individual firm'.[23]

McCloskey did, however, recognise the plausibility of the argument that 'the cotton textile industry did in fact exhibit "economies of industry scale", as it is put' – what Alfred Marshall called external economies of scale. These economies of industry scale, McCloskey posited, 'would be cheapenings of production arising from better training of the workforce or more specialised production of machines – arguments consistent with rationality, if not necessarily important in this particular case'.[24]

In his choice of examples of economies of industry scale, McCloskey confounded the development of productive resources – 'better training of the workforce or more specialised production of machine' – with the more complete utilisation of these superior resources. Because of the fixed costs incurred in the development process, unless the productive resources that have been developed are sufficiently utilised, they result in higher, not lower, unit costs. In the last half of the nineteenth century, it was the export-led expansion of the British cotton industry, that created the incentive for Lancashire's economic actors – both workers and capitalists – to make further investments in human and physical resources. In addition, by permitting a high level of utilisation of the expanded industry capacity, this export-led expansion was a critical condition for enabling these actors to realise returns on their investments.

Moreover, as we have argued, because these actors were willing and able to make these investments that expanded the supply of industry inputs, the British industry did not succumb to *diseconomies* of scale as it serviced an ever-growing market.

Perhaps McCloskey was arguing that those (mainly the workforce itself) who undertook to invest in the better training of labour and those (mainly Britain's textile machinery producers) who undertook to produce more specialised machinery could rationally expect that the growth of the industry would ensure that these investments would be sufficiently utilised to achieve 'economies of industry scale'. If so, we are in agreement. Yet in an earlier piece written with C. Knick Harley, McCloskey argued (with reference to the cotton industry as the most prominent example) that foreign trade was unimportant to British economic performance in the nineteenth century.[25]

They derive this conclusion from a static framework of economic analysis. 'Foreign trade', said Harley and McCloskey, 'can be viewed as an industry producing imports, say wheat, in exchange for sacrifices of exports, say cotton cloth'.

> The 'productivity' of this industry is the rate at which quarters of wheat exchange for yards of cloth, i.e. the 'terms of trade' . . . This matter of concept settled, the remaining question is the counterfactual one of how much in fact the terms of trade would have moved had Britain insisted on growing all its own wheat, and by the same token consuming all its own cloth.

Based on a simple arithmetic calculation, they argued that 'self-sufficiency in 1860 . . . would have cost Britain only . . . 6 per cent of national income'.[26]

'This matter of concept' of the role of foreign trade in national economic performance may be settled among the disciples of neoclassical trade theory because their static methodology permits (and indeed compels) them to take comparative advantage as given. But 'this matter of concept' is not settled among those of us who want to explain shifts in international competitive advantage. In deriving their estimate of 6 per cent of national income, Harley and McCloskey make the implicit assumption that the extent of the market does not affect the supply-side responses that determine the development and utilisation of productive resources. In dynamic perspective, as we have just argued, this assumption is untenable. By creating incentives for making investments and conditions for utilising these investments, the expansion of the market, whether through domestic or foreign sales, can and generally does affect the development and utilisation of productive resources, and hence economic outcomes.

We have not invented this dynamic argument. In Britain itself, it resonates with a well known proposition put forth by Adam Smith in the late eighteenth century, a perspective on British economic development elaborated by Alfred Marshall in the late nineteenth century, and, more recently, the increasing-returns arguments of Nicholas Kaldor.[27] Smith, Marshall, and Kaldor all proposed theories of economic development based on a dynamic interaction of demand and supply: the growth in the market creates incentives to invest in productive capabilities (even if only because market expansion increases opportunities for learning by doing), and also ensures a high level of utilisation of the investments that are made.

What did Harley and McCloskey have to say about the sources of Britain's competitive advantage in cotton textiles? Drawing on an earlier article by Harley, they argued that 'when British industries were compared with their German and American counterparts it was clear that Britain's competitive position was strongest in certain old industries – textiles, shipbuilding, heavy engineering, and even some branches of ferrous metal production. This advantage appears to have been based on the skills that the labour force had developed over a century of industrial experience'.[28] Again we agree. But why was Britain unique in this accumulation of 'skills . . . developed over a century of industrial experience'? Harley and McCloskey attributed Britain's competitive advantage before 1860 to the nation's 'own ingenuity in making exported cotton cloth cheaper'.[29] These arguments are not wrong. But they are arguments in search of a perspective on economic development that the static theorising of neoclassical economics does not, and cannot, provide.

III

The Extension of British Competitive Advantage

By the late nineteenth century, the British cotton industry had developed an experienced labour force which worked with process technologies – the self-acting mule and the power-loom – that, after well over a half century of widespread use, were reaching the limits of mechanical perfection. The Lancashire industry continued to rely overwhelmingly on mules through the 1940s and on power-looms through the 1950s, even as cotton textile industries around the world were shifting almost exclusively to ring spinning as well as to much higher proportions of automatic looms than was the case in Britain.

Invented in 1828, ring-spinning technology was dramatically improved and made commercially viable in New England during the 1870s and early 1880s in the wake of the rapid post-Civil War growth of mule spinning in Fall River and a series of strikes staged there by mule operatives of Lancashire origin. The ring-frame required the use of higher quality (longer staple and higher grade) cotton than the mule to spin a given count of yarn, but permitted the use of inexperienced labour and, by virtue of using higher quality cotton, produced a stronger yarn. Although perfected by the machinists of New England, ring spinning was the technological breakthrough that permitted the rapid expansion of the cotton textile industry of the American South from the 1880s – a regional industry that increasingly outcompeted the older industry of the North.[30]

The first commercially successful automatic loom – the Draper Company's Northrop loom – was also a New England invention. It made its appearance in 1894 as the result of what may have been up to that date the largest research and development expenditure on a single technology in the United States. By automating the previously labour-intensive process of reloading the weft yarn, the automatic loom permitted one operative to tend 20 to 30 looms prior to World War I, compared to the machine-worker ratio of eight that prevailed on power-looms in the United States. In Britain, where the yarn used in power-loom weaving was more subject to breakages than in the United States and where collective bargaining determined the number of looms per weaver, the machine-worker ratio on power-looms was only four. The few British firms that invested in automatic looms before World War I achieved machine-worker ratios of 14 to 20.[31]

The fixed cost of an automatic loom was about three times that of a power-loom. With the exception of Britain, the automatic loom was most quickly adopted in the high-wage countries of the world. As late as 1936 only 12 per cent of the cotton looms in Japan were automatic, higher than Britain's 3 per cent, but much lower than the United States's 68 per cent or Italy's 23 per cent.[32] Given its high fixed cost, the automatic loom required high machine-worker ratios to achieve low unit costs. To achieve high machine-worker ratios in turn required the use of strong, break-resistant yarn. The fully integrated firm of Ashton Brothers, the first firm to install automatic looms in Britain, experimented with using its existing mules to supply yarn to its new weaving machinery. But, in keeping with the practice around the world, even this British firm quickly installed rings to supply the break-resistant yarn that could realise the high-throughput potential of the automatic loom.[33]

Just as the advent of a viable ring-spinning technology permitted the US South to use less experienced labour and challenge the predominance of New England within the protected American market, so too did the diffusion of ring spinning enable some low-wage countries in Asia (particularly India, China, and Japan) and Latin America (particularly Brazil and Mexico) to challenge Britain in the markets of the less developed economies. Of these countries, Japan would eventually – in the decades between the two world wars – usurp Britain's position as the leading exporter of cotton goods. But before World War I, in direct competition with these low-wage countries and ring spinning technology, the British cotton industry maintained competitive advantage in all but the coarsest goods. Between 1889 and 1913, the British cotton industry expanded the total value of piece-goods exports by 92 per cent, with the value to India increasing by 89 per cent, to China by 54 per cent, to Hong Kong by 109 per cent, to Argentina by 138 per cent, and to Egypt by 205 per cent. In 1889 India and China together accounted for 46 per cent of the value of British piece-goods exports, and in 1913 still 43 per cent.

Before World War I perhaps as much as two-thirds of the value of British piece-goods exports were absorbed by the less developed areas of the world.[34] To meet the continued growth of its markets, both foreign and domestic, the industry expanded its capacity dramatically prior to World War I. In 1914 the industry had 14 per cent more spinning and weaving firms than a decade earlier, and these firms contained 24 per cent more spindles and 23 per cent more looms.[35]

Over the past two decades, economic historians have debated the question of how the British cotton industry accomplished its phenomenal expansion from the late nineteenth century to World War I despite its marked lag in introducing the new spinning and weaving technologies and its need to pay wages to its workers that were many times those paid by cotton textile firms in the expanding low-wage industries of Asia and Latin America. The focus on the case of the British cotton industry has been part of a larger debate on British economic performance in the decades preceding World War I – a larger debate that was set in motion in the late 1960s and early 1970s by the new economic historians' attack on the hypothesis of 'entrepreneurial failure', with McCloskey and Sandberg in the vanguard. They were highly critical of traditional economic historians such as David Landes and Derek Aldcroft who, taking a 'sociological view of the matter', had argued that British entrepreneurs 'failed' without providing any *economic* evidence that a failure had in fact occurred. As a result of a number of industry case studies by new economic historians, McCloskey and Sandberg claimed that 'the late Victorian entrepreneur who started his historiographic career in damnation is well on his way to redemption'.[36]

Central to the case-study evidence was Sandberg's pioneering analysis, first published in 1969, of the choice of spinning technology in Britain prior to World War I. In his subsequent book, that included this case study, Sandberg described his test of the entrepreneurial failure hypothesis as 'an attempt to see whether in fact British cotton textile firms were irrational and "technologically backwards" in the period after 1880'.[37] Sandberg argued that neither the relatively slow diffusion of ring spinning in Britain in the twentieth century nor the sharp decline in the British cotton industry after World War I 'in any way proves that the British made a mistake, or were irrational, in not introducing more ring spindles before World War I'.[38]

Comparing the relative factor costs inherent in using rings and mules in Britain prior to World War I for spinning different counts of yarn, Sandberg concluded that it was rational for British spinners to invest in rings for spinning twist (warp) yarns that were a little below counts of 40 and weft yarns even for counts in the low 40s. The major factor costs favouring the mule were its use of a lower, and hence less expensive, quality of cotton for spinning a given count and, in the case of weft yarn, the extra transportation costs of shipping ring weft to specialised weaving mills because ring yarn was spun on wooden bobbins whereas mule yarn was spun on the bare spindle. The major factor cost favouring rings derived from the use of cheaper female labour.[39] Based on his estimates of Lancashire's actual aggregate investment in rings and mules for spinning yarns below and above no.40 in the period 1907–1913, Sandberg concluded that 'British manufacturers . . . appear to have behaved in a rational manner. At the very least these results should throw the burden of proof onto those who maintain that the British were irrational in their choice between rings and mules'.[40]

Over a decade after the original publication of this rings and mules analysis, William Lazonick saw fit to subject Sandberg's exercise to an empirical critique. He found that Sandberg had overestimated the factor-cost advantages of rings because his calculations assumed one-half too few mule spindles per worker and did not take into account the cost of shipping wooden bobbins (stripped of ring weft) back to the spinning mill. Lazonick also found that Sandberg had overestimated the amount of investment in rings in 1907–1913. The combination of Sandberg's error in estimating investment in rings with his errors in estimating factor costs made investments in rings look more attractive than they really were.[41]

Lazonick's own empirical findings did not upset Sandberg's managerial rationality hypothesis. On the contrary, Lazonick argued that the corrections showed that, given the relative factor costs that they faced, cost-minimising Lancashire managers had even more of an incentive to invest in mules than Sandberg had thought, and that they indeed did invest in more mules than Sandberg had calculated! Lazonick, therefore, agreed with Sandberg that the managerial rationality hypothesis was appropriate for describing managerial choice of spinning technology in the pre-World War I period. But Lazonick contended that the corrections to the estimates of investments in rings and mules were important because they emphasised the extent to which, even on lower counts and particularly in the spinning of weft yarn, the British cotton industry was still, quite rationally from the perspective of the individual firm, not only relying on but also making *new investments* in the traditional mule-spinning technology prior to World War I.

Lazonick also argued that the corrected estimates of relative factor costs were important because they provided evidence of the particular cost constraints that encouraged the use of the traditional technologies in Lancashire, and hence focused the economic historian's attention on those constraints that would have had to be changed to permit a more rapid diffusion of ring spinning technology. Indeed, the fundamental problem with Sandberg's analysis, and with the attack on entrepreneurial failure to which it contributed, was not empirical but theoretical. In defining the issue of British economic performance in terms of managerial rationality, Sandberg along with McCloskey had adopted the point of view of the individual manager for the purposes of assessing the pre-World War I performance of selected British industries as well as the British economy as a whole.[42]

The McCloskey–Sandberg problematic is appropriate if one wants to see whether managers were optimising subject to certain hypothesised constraints and indeed if one wants to use (as Lazonick suggested that economic historians should) the constrained-optimisation methodology to explore systematically the nature of the constraints on managerial decision-making existing at selected points in time. But, relying as it does on a static (or at best a comparative static) methodology, the constrained-optimisation approach does not permit an analysis of the processes of technological and organisational innovation that are central to sustained productivity growth and shifts in competitive advantage.

As Joseph Schumpeter argued before World War I, the neo-classical problematic of adaptations to 'the circular flow of economic life' cannot explain the process of economic development. In *The Theory of Economic Development*, Schumpeter in effect distinguished between adaptive managers who optimise subject to given constraints and innovative entrepreneurs who take actions to overcome these constraints.[43] As Lazonick argued, McCloskey and Sandberg failed to take cognizance of the Schumpeterian distinction between entrepreneurs and managers, despite the existence of a large literature on the interpretation and usefulness of the Schumpeterian distinction.[44]

McCloskey and Sandberg could justifiably reply that the proponents of the entrepreneurial failure hypothesis did *not* make the Schumpeterian distinction between entrepreneurs and managers central to their own analyses, and hence did not explicitly differentiate their perspective from the neoclassical conception of managerial activity. But then neither Landes nor Aldcroft actually posited that British businessmen were acting *irrationally* in their technological choices, as McCloskey and Sandberg implied.[45] In *The Unbound Prometheus*, Landes argued: 'Even when the British entrepreneur was rational, his calculations were distorted by the shortness of his time horizon, and his estimates were on the conservative side'.[46] In the introduction to his edited book, *The Development of British Industry and Foreign Competition, 1875–1914*, Aldcroft argued:

> The fact that some industrialists were slow to adopt new techniques does not necessarily mean that they were inefficient or lacked enterprise. One might, for example, criticize cotton manufacturers on the grounds that they ignored the ring spindle and automatic loom. But this was not due to conservatism on their part but rather to the fact that the new machinery was not really suitable to English conditions of manufacture.[47]

Indeed, in *Lancashire in Decline*, Sandberg cited both the page on which this statement appears and R.E. Tyson's contribution on the British cotton industry to the Aldcroft book as reflecting agreement with the managerial rationality hypothesis.[48]

The real issue, therefore, was not whether British cotton managers were rational (all participants in the debate assumed they were) but the relation between *rational* managerial decision-making and the competitive performance of the British cotton industry. After positing the test for managerial irrationality as his primary purpose in *Lancashire in Decline*, Sandberg stated that 'a secondary question is the extent to which any mistakes [British cotton firms] may have made concerning the new technology could have affected Lancashire's competitive position'.[49] Three amendments to this version of the problematic are in order. First, because managerial irrationality is not at issue, we need no longer label managerial technological choices as 'mistakes' (for as we shall see, the tendency of some later participants in the debate to do so has merely confused the issues). Second, the impact on Lancashire's competitive position of its continued reliance on the traditional technologies becomes the primary, not secondary, question. Third, because the British cotton industry put in place so much new fixed capital – much of it taking the form of the traditional spinning and weaving technologies – in the decade before World War I, the problematic should include a consideration of whether there was any systematic relation between the strong competitive position of the British cotton industry before the war and its dramatically weakened position in the 1920s (and beyond).

The first detailed contribution to the modern debate on the sources of British competitiveness prior to World War I was made in 1968 by R.E. Tyson in his chapter in Aldcroft's edited volume on British industry and foreign competition. Tyson began his essay: 'The British cotton industry in 1913 has been described [by Charles Kindleberger] as "highly developed, technologically stagnant, competitively fragile"'.[50] Tyson succinctly summarised the essential characteristics of demand and supply that affected Britain's competitive position prior to the war. Two-thirds of his article documents the industry's export-oriented expansion in the decades prior to World War I, with the emphasis on the continuing importance of markets in the low-income countries of the world. The last nine pages draw on the (then) standard industry sources to describe more or less correctly the organisational characteristics of the industry and the productive and cost characteristics of the mule and power-loom that enabled the British cotton industry to sustain its competitive advantages in the face of the rise of both low-wage and high-technology competitors.

Tyson did not, however, provide an explanation for why this competitive advantage was lost so dramatically after 1913. Was there something about the pre-war expansion that contributed to the rapidity and extent of the post-war loss of markets, or were the extended rise of the industry and its precipitous fall two largely unrelated phenomena? That even before the war the continued reliance on traditional technologies might have pressed the limits of the industry's accumulated competitive advantages finds statistical support in estimates made by G.T. Jones in the 1930s of prewar trends in 'real costs' – the inverse of what later came to be known as total factor productivity. Jones's general conclusion was that there was 'little, if any, net change in the efficiency of the British cotton [industry] during the period

1885–1910 . . . [as] the real cost of manufacturing began to increase about 1900 and continued to rise until the outbreak of war in 1914'.[51]

Jones himself found his findings paradoxical, indicating as they did 'a progressive fall in efficiency' after 1900, accompanied by a 'great expansion' in plant and equipment.[52] Sandberg, however, raised doubts about the existence of a paradox. His calculations showed a 40 per cent increase in labour productivity between 1885 and 1913, with no apparent slowdown in the rate of productivity growth after 1900. Indeed, by making a number of adjustments to Jones's real cost index, Sandberg estimated 'a reduction of real cost by 9 per cent to 10 per cent between 1885 and 1910 and of 11 to 12 per cent between 1885 and 1914.' 'What is more', Sandberg went on to argue, 'after my corrections have been made, this improvement is spread fairly evenly over the [1885–1914] period. The peculiar deterioration Jones recorded for the post-1900 period has vanished. It has, roughly speaking, been replaced by a continuation of the trend he noted for the 1890s'.[53]

Hence in Sandberg's view, managerial rationality in the choice of technology and progressive reduction in real costs went hand in hand. In 'The Performance of the British Cotton Industry, 1870–1913', the present authors have challenged Sandberg's productivity and real cost calculations. We found a general stagnation in the growth of labour productivity from 1890 to 1913, with negative productivity growth in the spinning sector after the turn of the century. We attributed this stagnation in productivity not only to the continued reliance on technologies that had reached the limits of technical development but more importantly to the way in which these technologies were utilised in the period of more intense competition from the 1890s. We stressed in particular the tendency of spinning and weaving firms to cut costs by the use of inferior – lower grade and shorter staple – cotton for the spinning of given counts of yarn and the weaving of given types of cloth.[54]

The existence of the Liverpool cotton market made it possible to shift to inferior cotton whenever changes in the relative prices of grades and staples warranted it and the going price of yarn necessitated it. In addition, the traditional technologies and modes of work organisation encouraged this use of inferior cotton inputs. On the one hand, compared with the high-throughput ring-frame and automatic loom which required the use of break-resistant yarn made from longer staple and higher grade cotton, the mule and power-loom were more adaptable to inferior cotton inputs. On the other hand, Lancashire's industrial relations systems gave workers an incentive to supply more effort to maintain productivity and earnings in the face of what the workers called 'bad spinning' or 'bad weaving' – increased yarn breakages that arose from the use of inferior cotton inputs. At the same time, these systems prevented managers from using superior cotton as a labour-displacing investment. Even some improvements in the traditional technologies that could have been effort-saving ended up serving as opportunities for managers to use inferior cotton inputs rather than permit workers to achieve higher levels of output with the same amount of effort.[55]

Jones's real cost index did not capture the movement to inferior cotton inputs, nor the impact of this movement on labour productivity. But through the use of inferior cotton it was possible to cut costs and expand markets even while the growth in output per worker-hour was stagnating. When combined with the manifold external economies of scale that Britain still possessed in the early part of the century, the use of inferior cotton inputs as a supply-side response to increased international competition was, moreover, compatible with the capture of markets in the low-income areas of the world. Constrained by low incomes, consumers in these markets were willing to accept cloth that was less durable (because it was made from inferior cotton and, as was generally the case with lower priced British cloth, was heavily sized) as a trade-off for cloth that was less expensive.

This production strategy of the degradation of product quality was particularly viable for cloth to be worn in warmer climates and also opened up new possibilities for the types of goods that could be made affordable to low-income but fashion-conscious customers. As A.J. Marrison has shown for Latin America, income-constrained consumers sacrificed cloth quality in order to be able to afford more highly finished goods, a dimension of product quality that the Lancashire printing and dyeing sectors were able to meet at relatively low cost.[56] The unique capability of Lancashire's spinning and weaving firms to adjust their costs to the low-income constraints in these mass markets furthered the extent to which all vertical levels of the British cotton industry benefited from external economies of scale.

The Lazonick–Mass arguments concerning the way in which the British cotton industry extended its competitive advantage before the war have been criticised by Saxonhouse and Wright in a reply to Lazonick's critique of their earlier work on the diffusion of rings and mules around the world in the late nineteenth and early twentieth centuries.[57] In the earlier work, 'New Evidence on the Stubborn English Mule and the Cotton Industry, 1878–1920', Saxonhouse and Wright propounded the argument that reliance on mule spinning and vertical specialisation was consistent with the expansion and profitability of the British cotton industry in the pre-World War I decades – an argument that Lazonick and Mass had also made.[58] In their response to Lazonick, Saxonhouse and Wright took cognizance of the Lazonick-Mass argument of how the British cotton industry captured the markets of the underdeveloped world before the war but did not find it persuasive. As they argued:

> The combined share of British cotton piece goods exports to the four largest low-income markets (Bombay, Bengal, Turkey and China) was in fact no larger in 1913 than it had been in 1889. The inverse relationship between product quality and market expansion was far more striking during the sixty years *prior* to 1890 than it was

> during 1890–1913, the period when Lazonick believes the British made their most fateful mistakes. Lazonick and Mass emphasize the effort to cut costs by use of inferior cotton inputs, but more than 95 per cent of British cotton imports were from Egypt or the United States (i.e., the longer-staple, higher-quality varieties), far higher than any other country, and there was no hint of a decline in this percentage before World War I. Our machinery data show no trend toward production of lower-count yarns, and the best Lazonick and Mass are able to do is to suggest that the quality decline may have taken other forms which they are as yet unable to document. This is, to put it mildly, a weak base on which to erect an ambitious historical superstructure of industrial rise and fall.[59]

The fact that Britain's share of the low-income markets remained constant in the decades prior to the war is irrelevant to the issue at hand. What is important is that these markets continued to take some 45 per cent of the value of Lancashire's exports, despite the rise of low-wage Asiatic competition. As for the rest of their rebuttal, it also has nothing to do with the Lazonick–Mass argument. We did not argue that reliance on the low-income markets meant a shift to lower counts of yarn and coarser cloth. The problem for Lancashire firms from the 1880s was precisely the opposite; they had to contend with the rise of low-wage competitors using ring spinning to capture the coarse goods markets. It was the very existence of these competitors that made Lancashire's ability to maintain its share of the low-income markets all the more remarkable. Nor did we argue that Lancashire maintained its competitive advantage by shifting away from the American cotton that was used for producing the Oldham yarns destined for India and other low-income markets. Rather, as we have already indicated, our 'inferior cotton' argument is that Lancashire spinners cut costs by using shorter staple and lower grade *American* cotton, and that the organisational structures and technologies that characterised the Lancashire industry gave them both the ability and incentive to pursue such a strategy.

Saxonhouse and Wright asserted that Lazonick and Mass were unable to document the 'other forms' that the quality decline might have taken (this despite their own recognition elsewhere of the flexibility of the mule in using lower staple and lower grade cotton).[60] We gave examples of the cost-cutting possibilities:

> In spinning No.32 yarn, cotton costs constituted almost 90 per cent of total costs, and a shift from middling 1 1/16-inch cotton to fair low middling 1-inch cotton would have saved 5 per cent of total spinning costs in 1907, and a shift from the same cotton to good ordinary 1-inch staple would have saved 7.5 per cent. A more dramatic shift from good middling 1 1/8-inch cotton to good ordinary 1-inch cotton would have saved 22.5 per cent.[61]

We lamented the absence of 'data on the utilization of cotton inputs during this period even for one firm in the industry, much less the industry as a whole'.[62] But our recognition that such data were unavailable was not an admission that we lacked evidence on the pervasiveness of the use of inferior cotton as a cost-cutting measure in Britain before the war. We cited the record of mounting industrial conflict over bad spinning and bad weaving from the 1890s to World War I. The collectively bargained compensation paid to spinning and weaving operatives because of bad spinning and bad weaving suggested productivity losses attributable to the use of inferior cotton that were 5 to 10 per cent of normal production. In addition, we re-evaluated Sandberg's index of movements in the quality of cotton goods exports in terms of the use of inferior cotton for producing given counts of yarn as well as heavy sizing for producing given types of cloth.[63]

Further, it should be understood that our focus on Lancashire's use of inferior cotton was not the 'base' upon which we sought to build a 'superstructure' of Lancashire's rise and decline. Our purpose in analysing the causes and consequences of this particular cost-cutting strategy was to show how the record of Lancashire's remarkable prewar expansion could be reconciled with a record of stagnating labour productivity. We argued that the managers of spinning and weaving concerns were motivated to use this strategy because it gave them an *additional competitive edge* in markets where demand was constrained by low incomes.

Our argument was *not* that such cotton cost-cutting was the only, or even the major, source of Lancashire's competitive advantage before the war. The British cotton industry could continue to compete on the basis of its experienced, hard-working labour force and the industry-wide economies of scale (outlined at the beginning of this essay) that came from the high levels of utilisation of the productive resources that had been put in place in Lancashire during the nineteenth century. Our point in focusing on the use of inferior cotton – and on the labour conflicts it engendered because it required operatives to expend more effort for the same pay – was that, given its prior competitive advantages, the British cotton industry sought successfully to gain a competitive edge in the low-income markets through the more intensive utilisation of its traditional productive resources, and not by the further development of effort-saving technologies.

If Saxonhouse and Wright misinterpreted our arguments concerning the pre-war competitive position of the British cotton industry, Gregory Clark has simply ignored them. In an article entitled, 'Why Isn't the Whole World Developed?', Clark has summarised his version of the debate on prewar economic performance:

> Recently scholars have excoriated managers of the British textile industry for their alleged failure to choose the correct techniques in spinning and weaving in the late nineteenth and early twentieth

> centuries. The decline of the British industry from the 1920s onwards is attributed to these managerial failures.[64]

Which scholars made such arguments? Clark cited two pieces by Lazonick: his critique of Sandberg's analysis of choice of spinning technology and a summary statement on the relation between industrial organization and technological change in the twentieth-century decline of the British cotton industry.[65] But contrary to Clark (and as we have already summarised), these two contributions by Lazonick *confirmed the validity* of the managerial rationality hypothesis. At the same time, this work stressed the inability of the managerial rationality hypothesis to explain why cost-minimisation subject to given constraints resulted in competitive advantage before the war and competitive disadvantage after the war, and why, after it experienced dramatic losses of world markets in the 1920s, the British cotton industry experienced such difficulty in moving from its traditional, low-throughput mules and power-looms to the newer, high-throughput rings and automatic looms.

Using Lazonick as a foil for his own argument that to focus on 'management failings seems to me misguided', Clark went on to contend that 'given the labor cost [he means wage cost] advantages of Britain's competitors, what really requires explanation is not the ultimate demise of the industry but why British textiles continued to thrive so long'.[66] Yet Clark made no reference to the Lazonick–Mass article, published some three years previous to his own piece, in which we asked precisely this question and offered some answers. Clark himself attempted to explain 'why British textiles continued to thrive so long' by means of a static presentation of relative factor costs in cotton industries around the world circa 1910.

Indeed, in keeping with his static methodology, Clark focused his critical attention on Lazonick's empirical correction of Sandberg's static analysis of relative factor costs in the choice of spinning technology within Britain. 'One of the major mistakes attributed to British managers', Clark asserted, 'was a failure to switch from mule spinning to ring spinning. William Lazonick has argued that this failure stemmed from the more fundamental error of retaining the horizontal [*sic*] specialization of the spinning and weaving factories'.[67] Clark went on to argue that the transport cost savings of not having to ship wooden bobbins that came from retaining the mules was only a small fraction of the unit labour cost disadvantage of the British industry compared with the Indian industry.

Clark has confused the issues. Although the transportation cost savings inherent in the continued use of mules under British conditions did enter into the debate over the choice of technique in Britain, the measure of the transportation cost constraint had little to do with the Lazonick–Mass analysis of how the British industry remained competitive – how the industry reduced costs subject to (among many other factors) such a transportation cost constraint – prior to World War I. 'The correct question', Clark immediately went on to say, 'is not why bad choice of technique doomed the British industry, but why an industry apparently so burdened by high costs for its major input [labour] could remain so long successful, competing against a host of low-wage competitors'.[68]

Although the Lazonick–Mass contribution did not adopt Clark's methodology of comparing factor costs around the world just prior to World War I, we did ask the 'correct question' of how the British cotton industry was able to expand its exports to these countries, and particularly to India, from the 1890s to World War I. In answering this question, we showed that, by adapting on the basis of the traditional technologies and organisational structures that had characterised the rise of the British cotton industry to international dominance, British managers were able to remain competitive against the emerging low-wage industries in the low-income areas of the world. Contrary to Clark's misrepresentation of Lazonick's work, we have never argued that, given the constraints that they faced as individual decision-makers, British managers made mistakes in pursuing, or were mistaken to pursue, this adaptive strategy. Our argument is that, given the organisational and technological contexts within which they made their strategic decisions, British managers of specialised firms were able to continue to cut costs on the traditional technologies but were prevented from obtaining the high-throughput benefits of the new technologies. Quite rationally, they avoided making investments in the new technologies. And generally speaking, their very experience in the industry enhanced their abilities to optimise subject to the constraints they faced – to be good 'neo-classical' managers.

Clark's own answer to the 'correct question' of how Britain maintained competitive advantage before World War I was to show that just before the war the British cotton industry was paying wages that were some 35 per cent higher than in Germany and France, over 50 per cent higher than in Russia and Italy, well over 500 per cent higher than in Japan and India, and over 800 per cent higher than in China. Britain had a marked competitive advantage in the cost of coal over all countries except Japan (whose coal cost, according to Clark, was just nominally higher), and a competitive advantage in the cost of physical capital, except when compared with China, Japan, and Mexico whose mills ran double shifts. Britain's main competitive advantage lay, however, in the greater number of machines that each British worker tended; almost 60 per cent higher than in Germany, about 85 per cent higher than in France and Russia, over 130 per cent higher than in Italy, 285 per cent higher than in Japan, and over 300 per cent higher than in India and China. In the US South (but not the North), a higher machine-worker ratio than in Britain more than offset higher wages. The US South lost out to Britain, according to Clark's figures, because of its higher unit capital and coal costs.[69]

'The only countries', Clark argued, 'which ought to have been able to compete with the British on international markets [in 1910] were India, Japan, and China – the only countries that did in fact compete'. Their source of competitive advantage was extraordinarily low wages, but even then much of this advantage was lost because of the very low efficiency of Asian labour, as reflected in the machine–worker ratios.[70]

Clark provided no discussion of, or data on, the British cotton industry's share of various international markets prior to World War I. But we know that the British industry expanded its exports to China and India in the prewar decades despite its inability to compete against cheap labour on the coarsest goods (and particularly yarns). Clark made no attempt, however, to determine on which types of goods – coarse, medium, or fine; yarns or cloths; grey, bleached, printed, dyed – the low-wage Asian countries had competitive advantage. Indeed, his statement that India, China, and Japan were 'the only countries which did in fact compete' might lead the unsuspecting reader to come to the erroneous conclusion that the cotton industries of these very low-wage countries had pushed British goods out of the Asian markets before the war.

Hence, despite his claim that his essay would address the allegedly previously unanswered question of how the British cotton industry remained competitive before World War I, Clark managed to avoid asking the 'correct question' of how Britain maintained such large shares of these very low-income markets before the war in direct competition with the very low-wage producers of Asia. Indeed, at this point in his argument, wittingly or not, Clark changed his own original 'correct question' *from* how, in the face of low-wage rivals, Britain maintained its competitive advantage in the prewar period *to* why labour in these low-wage countries – and his references are generally to India, China, and Japan taken as a group – was so inefficient as reflected in the low machine-worker ratios.[71]

Clark rejected as plausible explanations for the low machine-worker ratios in the low-wage countries such items as the substitution of labour for capital, inferior capital equipment, inferior cotton, labour force inexperience, and malnourishment and undereducation of the labour force. He pointed out, moreover, that when workers from low-wage countries migrated to high-wage countries, they got paid high wages, presumably because they were now more productive than they had been at home.[72] He concluded, therefore, that the inefficiency of labour in the low-wage countries must 'attach to the local environment, not to the workers themselves'.[73]

Clark devoted two pages of his article to a discussion of these 'local effects' (or what in the abstract to his article he called 'local culture'). He gave the example of the resistance of workers in India to taking on more ring spindles, and of workers in various parts of the world, including Britain, to taking on more looms. He dismissed union power, labor–management relations, or personnel policies as determinants of differences in the number of looms per weaver on the grounds that, across countries, the machine–worker ratios were positively correlated with local wage rates. But this statistical correlation is equally consistent with the argument that the local wage rate was a function of worker productivity – that, given the development and utilisation of productive resources in a particular locality, workers got paid what their local industry could afford to pay them.

Clark was right to focus his attention on the influence of particular social environments on worker productivity.[74] Ultimately, however, the purpose of historical analysis is not to posit some preconceived or favoured explanation for an observed statistical correlation between factor productivities and factor prices. Its purpose is rather to explain the dynamic interaction between the two phenomena in a particular social environment.

A dynamic historical analysis quickly exposes a glaring problem with Clark's 'local effects' argument. His cross-national data on wage rates and machine-worker ratios for the years just prior to World War I led him to lump together the cotton industries of India, China, and Japan as having the lowest wages and (save for the inconsequential case of Greece) the lowest labour efficiency in the world. The problem is that, during World War I and throughout the 1920s, Japan was the rising star of the international cotton industry. During the mid-1930s Japan surpassed Britain as the world's dominant exporter, while the Indian cotton industry, with an earlier start and greater capacity than the Japanese, required tariff protection to keep Japanese goods out. Even with the tariff, India became Japan's largest market for the export of cotton cloth. Between 1914 and 1932, while Britain's share of Indian cloth imports declined from 97 per cent to 50 per cent, Japan's share rose from 0.1 per cent to 45 per cent. In 1937 the Japanese cotton industry accounted for 37 per cent by volume of the world's exports of cotton cloth, whereas Britain accounted for 27 per cent and India only 3 per cent.[75]

Japan's rise to international dominance in cotton textiles had much to do with changes in the efficiency of its labour force. In his report of a visit to India in 1930 (one year after he had visited Japan), Arno S. Pearse, the General Secretary of the Manchester-based International Federation of Master Cotton Spinners' and Manufacturers' Associations (and a source whom Clark cited extensively) presented a double column, point-by-point comparison of the cotton industries of India and Japan.[76] He reported that 'wages per head are 10 to 15 per cent. less in Bombay than in Japan, but output being smaller in India, labour cost is higher per pound of yarn and per yard of cloth produced'.[77] The main reason why India's labour costs were higher was because (as Pearse said later in his report, in a passage that Clark cited) 'the workpeople would not look after more than one side [of a ring-frame]'.[78] By contrast, in Japan, 'operatives work as many machines as can be attended under fair conditions, actually up to three sides of a spinning frame, and 5.5 looms per operative (against one side and less than two looms in India)'.[79]

According to 1932 cotton spinning data for no.20 yarn, compared with Britain, unit labour costs were 58 per cent less in Japan but 8 per cent more in India. Spinning wages were just 6 per cent greater in Japan than in India but the number of spindles per worker 143 per cent greater.[80] By 1932 the number of power-looms per weaver in Japan was more than three times as great as in India. Compare these figures to Clark's data for 1910, when Japan's wages were 3 per cent higher than India's and its machinery–worker ratio only 6 per cent higher.[81] Even if these statistics make it reasonable to characterise both the Japanese and Indian cotton industries as low-wage and low-efficiency producers in 1910, it is a fatal error for understanding why the whole world is not developed – or why some previously poor countries *are* developed – to lump the two national industries together some two decades later.

For how would Clark explain what happened to Japan's 'local environment' that made its labour so inefficient in 1910, but so efficient in 1930? If we take this to be the 'correct question', it is one that cannot be answered with the static, ahistorical methodology that Clark has used. Clark himself has not bothered to raise this question, even when, by virtue of Mira Wilkins' protest that managerial structure and capability might have something to do with the answer, the reality of Japan's success stared him in the face. Clark's response to Wilkins relied on data from 1929–30 on the relative efficiency of Japanese-owned mills in Japan compared with both Japanese-owned and Chinese-owned mills in Shanghai. Compared with the Chinese-owned mills, spindles per worker (holding yarn count constant) were 8 per cent higher in Japanese-owned mills in Shanghai but 92 per cent higher in the mills in Japan.[82]

There is a good reason why Clark had to get such data from the inter-war period rather than from the pre-war period with which his original article had been concerned. In 1910 the Japanese cotton industry, barely 20 years old, had not yet developed the organisational or financial capability to engage in direct investment abroad (even though Japan's exports had already made substantial inroads against the Indians in the Chinese yarn markets and the Americans in the Chinese cloth market). Yet, as Clark himself recognised in his response to Wilkins (and despite his original position that differences in technology do not explain the wealth of nations), 'by the 1920s Japanese cotton mill managers had fully absorbed modern textile technology, had dispensed with the need for foreign managers and technicians, and had developed methods and machines of their own even though the industry was still less than one-tenth the size of the British industry'.[83] Clark took no notice, however, of the contradiction between the data he used to reply to Wilkins and his original answer to his question, 'Why Isn't the Whole World Developed?'. For those social scientists concerned with understanding the wealth and poverty of nations, the 'correct question' is how in the first few decades of the twentieth century did the 'miracle' of the Japanese cotton industry occur. Given what we now know about the longer run technological and economic trajectories of Japan, the answer to this question has potentially momentous implications for understanding the dynamics of economic development today.

IV

The New Competition

We can consider the sources of competitive advantage of the Japanese cotton industry in the inter-war period under the same five cost headings – labour, fixed capital, materials, marketing, administrative – that we used in our earlier discussion of the sources of competitive advantage of the British cotton industry in the late nineteenth century. In the process, we shall contrast the sources of Japanese competitive advantage with those that enabled the British industry to dominate international markets a few decades earlier, and indeed up to World War I. We shall then be in a position to consider the state of the debate over the British response to the Japanese challenge in the inter-war period.

(1) *Labour costs*

The conventional wisdom among economic historians is that low-wage labour was critical to the rise of the Japanese industry. Even Clark, who focused on how inefficient the Japanese were in 1910, argued that low wages had enabled the Japanese to outcompete the British before World War I. Recently John Singleton has put forth the 'cheap labour' argument as a superior alternative to Lazonick's 'structural rigidity thesis' for explaining the decline of the British cotton industry.

> The most successful cotton industries in the present century have been in the developing countries, firstly Japan, and later India, Hong Kong, and Pakistan. Their rise stemmed from low production costs resulting from low labour costs. The product cycle model, in which dominance in a product group passes from the innovating region to areas possessing cheaper labour provides a better explanation of Lancashire's fortunes than the structural rigidity thesis.[84]

In fact, before the war, Japan's main export success was the displacement of India as China's main external source of very coarse yarn. But wages in India were even lower than in Japan; hence low wages could not have been the determining factor. Low wages were important in Japan's successful displacement from the China market of the very high wage but high productivity competition from the US South. From 1902 to 1913, Japan's share of imports of cloth into China rose from under 3 per cent to over 20 per cent. Nevertheless, low wages did not enable Japan to replace the relatively high-wage British, who still supplied over 53 per cent of the cloth imported into China in 1913, just 2 per cent less than their share in 1902. From 1900 to 1930 Japanese wages rose faster than British wages, especially after World War I when Japanese wages quadrupled while British wages only doubled. Therefore, a relative rise in British wages cannot be held responsible for giving Japan competitive advantage after the war.[85]

Moreover, the Japanese measure of expenditures on labour is biased downwards if limited to weekly wage rates. According to the pre-war data presented by Clark, Japan had very high costs of 'plant and machinery' per spindle, ranging from 40 per cent greater than the per spindle costs of India to 93 per cent greater than those of Britain.[86] Only the Swiss cotton industry had greater capital costs per spindle than the Japanese. The high cost of building a spinning mill in Japan (which Clark attributed simply to the cost of plant and equipment) was in part because of expenditures on the construction of dormitories for housing the labour force. In 1929 Pearse found that the cost of dormitories accounted for one-sixth of the cost per spindle for building and equipping a spinning mill. A firm's current expenditures on room and board subsidies, welfare work, pensions, health care, recruitment, and education could generate labour costs equal to about 25–30 per cent of a young woman's wages (including semi-annual bonuses).[87]

The dormitories housed rural farmgirls who entered the mills between the ages of 14 and 17 for periods of two to three years. Female overseers were selected from among these girls and remained in the mills for longer periods of time. Conditions were reportedly very poor even in the best mills until the 1920s, with the propensity for the girls to run away creating high levels of labour turnover. The prosperity of the 1920s and the emergence of ever more dominant companies in the highly productive export sector appear to have improved work conditions and worker morale substantially by the end of the decade.[88]

The relatively short stints of the girls in the mills placed a downward limit on the reduction of turnover rates. But once the girls stopped running away, the turnover became systematic, thus permitting the companies to meet their labour requirements in a planned and co-ordinated way. In his reply to Wilkins, Clark inaccurately stated that the average experience of Chinese in Japanese-owned mills in Shanghai 'was only slightly less than that of mill workers in Japan in 1927'.[89] It was true that 39 per cent of the Chinese workers and 45 per cent of the Japanese workers stayed more than three years. But the figures that Clark cited also reveal that 42 per cent of the Chinese workers but just 18 per cent of the Japanese workers had been in the mill only a year. Among Chinese workers who had less than three years on the job, there was a significantly higher level of unpredictable turnover.

In 1932, an American observer described the Japanese mill hands as 'docile, nimble, and deft', even though they lacked 'the physical strength or size of similar American labour and probably would not continue at our unusual pace on piece work'.[90] During the inter-war period the physical productivity of labour also remained higher in Britain compared with Japan, but the gap was rapidly closing. It was reported that in 1930 British cotton mills had a 30 per cent unit labour cost advantage over Japanese cotton mills. But the British advantage had been 47 per cent as recently as 1926.[91]

In addition to social investments to improve the labour of female operatives, each of the dominant Japanese cotton companies made investments in the technical capabilities of male workers whose services the firm expected to retain over the long term. Some of these human resource investments took the form of in-house training in machine maintenance. Machines running at high speeds virtually around the clock had to be maintained in top condition to avoid costly downtime. Another key technical skill, unique to the Japanese industry and requiring firm-specific knowledge of products and processes, was the blending according to firm-specific formulae of more expensive, longer staple (typically American) cotton with less expensive, shorter staple (typically Indian and Chinese) cotton. These blending techniques permitted a reduction in cotton costs while still producing a yarn that was strong enough to gain the benefits of high-throughput production technologies.[92]

Investment in human resources often meant sending technical and managerial personnel abroad to acquire knowledge of Western technology and business methods.[93] Such training enhanced a company's capability to engage in effective in-house R&D. The firm-specific interaction between scale and training was one reason for the increasing concentration of spinning in the Japanese cotton industry. Dynamically, firms that had attained competitive advantage over other Japanese rivals possessed the internal resources to make these costly and specialised investments in human resources as well as to offer the trained personnel attractive incentives to remain with the firm. The investments in human resources gave the firm access to superior technical capabilities while compelling the firm to attain a large share of the market to transform its high fixed costs into low unit costs.

(2) *Fixed capital costs*

The high fixed costs that the Japanese cotton industry incurred by investing in human resources could help to keep down the costs of physical capital investments. For example, firms tended to repair rather than replace machinery. But when dramatically improved machines, such as the Toyoda automatic loom, came on the market, the leading Japanese companies quickly made substantial investments in the new technology. Over the long run, the development and utilisation of new effort-saving, high-throughput machinery provided the foundation for Japan's sustained competitive advantage. The most important technological advances were in machines designed specifically for utilisation with the blended cotton that the Japanese spinning companies used to cut cotton costs. The development of these technologies depended on sustained investments in the Japanese textile machinery industry.

The first dramatic change in technology occurred in the sector of the Japanese industry oriented toward the domestic market – a sector in which firms were protected by both tariffs and limitations on the access of foreigners to the domestic distribution network. The production of yarn for both both export and domestic consumption became increasingly concentrated in large companies that used imported British ring-frames and preparatory equipment.[94] On the home market, these powerful spinning companies sold yarn to a multitude of small, specialised weaving firms that until the late 1890s produced cloth on handlooms. As late as 1922, 43 per cent of all cotton looms in Japan were still handlooms. By 1938, however, this figure had fallen to 9 per cent as weaving firms adopted domestically produced power-looms.[95]

Central to the development of a power-loom that could replace the handloom were the inventive efforts of Sakichi Toyoda. In 1896 Toyoda developed a wooden power-loom that, unlike the imported iron power-loom, was affordable to the small-scale Japanese weaver and was designed to produce the narrow cloth demanded in the Japanese and contiguous Asian markets. Toyoda's company motto, 'Complete import substitution and then exportation', applied to both the cotton goods and textile machinery industries. In making the transition from the exportation of yarn to the exportation of cloth as well, the 'spinning' companies had integrated forward into weaving. Using primarily imported looms, in 1915 these integrated companies controlled 95 per cent of the Japanese manufacture of wide cloth, virtually all of which was exported. From 1914, however, the dependence on imported looms for the export sector was overcome by the introduction of the Toyoda Model N loom, an all-iron power-loom for weaving wide cloth that was rapidly adopted by the integrated 'spinning' companies and that also diffused more slowly to those specialised weaving mills that sought to take advantage of growing export opportunities during World War I and throughout the inter-war period. By 1920 loom imports into Japan had virtually ceased. At that time 64 per cent of the looms installed in the weaving mills of the integrated companies were imported. Of these imported looms, 94 per cent were British-made power-looms and 6 per cent were Draper automatic (bobbin-changing) looms. Toyoda power-looms represented 92 per cent of the Japanese-made looms in the integrated mills.[96]

Profits from the sale of Toyoda power-looms financed the research and development of a Japanese-made automatic loom – an R&D effort that extended over two decades.[97] To be economically viable, the automatic loom had to work at high speed using yarn made from the relatively short staple, blended cotton produced by the Japanese mills. Based as it was on the principle of injecting a fresh bobbin into the same shuttle, the Draper automatic loom required stronger, more break-resistant yarn, particularly on the first picks after the bobbin was changed. The technological basis for the ultimate success of the Toyoda automatic loom was the perfection of a shuttle-changing weft replenishing device that permitted continuous, high-speed operation even with the less break-resistant Japanese yarn.[98]

When the Toyoda automatic loom came on the market in 1924, it was an immediate success. By 1931 17,000 machines had been installed, and by 1936 40,000 machines. Initially it was the integrated mills of the 'spinning' companies that introduced the automatic looms on a large scale to produce cloth for export. But by the late 1930s some 30 per cent of the industry's automatic looms were in specialised weaving mills that, purchasing standardised yarn from the concentrated 'spinning' companies and selling standardised products through the powerful trading companies, were able to share in the industry's competitive success. When a Toyoda automatic loom replaced a Toyoda power-loom, labour productivity increased by 5 to 19 times, and when a Toyoda automatic loom replaced an imported power-loom, labour productivity increased by 3 to 9 times.[99]

The result was Japanese domination of world cotton textile exports. In the China market, for example, in 1913 Britain had had a 53 per cent share of cotton cloth imports and Japan only 20 per cent. By 1919 Britain's share had fallen to 26 per cent and Japan's had risen to 61 per cent. Britain recovered some of its market share in the early 1920s – in 1921 Britain and Japan each had a 43 per cent share. In 1925, however, Britain had only 24 per cent of the market while Japan's share had climbed to 66 per cent, and in 1930 Britain's share was 13 per cent and Japan's 72 per cent. It was in the last half of the 1920s, after the Japanese 'spinning' companies had introduced the automatic loom, that British competitiveness in the China market collapsed, with loss of competitive advantage following quickly in other markets around the world.[100]

The Japanese capture of large market shares permitted the high fixed costs of the adoption of the Toyoda loom to be transformed into low unit costs. Greatly enhancing the ability of the export-oriented integrated mills to achieve higher levels of utilisation of their plant and equipment than their foreign competitors were their investments in the dormitory system, already described. By giving the mills control over the allocation of workers' time around the clock and by thwarting the development of independent worker organisations, the dormitory system helped to overcome the constraints on shift work that might otherwise have been imposed by worker opposition to the disruption of family life. In Britain the opposition of unions to multiple shifts was a major obstacle to the adoption of automatic looms. In Japan, legislated limits on night work had been on the books from 1911 but were not enforced until 1929, after the cotton industry's international competitive advantage had been established. Even then, the legislation permitted two 8½-hour shifts.[101] Besides lowering the unit costs of plant and equipment, the ability of a Japanese mill to run two shifts offset the high fixed costs of recruiting and housing its labour force.

The spinning processes continued to require imports for the basic technologies, despite attempts by Toyoda to develop a complete line of Japanese machines for transforming raw cotton into yarn. But Japanese textile engineering firms did produce improved parts, such as spindles, rings, and travellers, for the imported machines. As a result, during the 1920s Japanese engineers were able to achieve spindle speeds of up to 11,000 rpm compared with the maximum of 9,000 rpm achieved by foreign competitors. With Toyoda again leading in the development of machine technology suited to Japanese cotton blending practice, during the 1930s the major cotton companies adopted high-draft spinning equipment that raised labour productivity in spinning by 150 per cent.[102]

(3) *Materials costs*

The achievement of the Japanese textile machinery industry was its development of high-throughput technologies that did not require that the producers of yarn and cloth forgo the cost advantages of cotton blending. That the Japanese cotton industry was able to gain unique competitive advantage through the blending of cotton requires an understanding of the unique organisational features of the industry that determined the relation between cotton purchasing and textile production. Contemporary observers of the Japanese cotton industry pointed to the importance of cotton blending for the industry's competitive advantage, but lamented that the blending techniques used by particular firms were closely guarded secrets.[103] The organisational requirements for achieving cost savings on the basis of blended cotton are, however, quite clear.

Three import companies, Toyo Menkwa (a subsidiary of Mitsui Trading Co.), Nippon Menkwa, and Gosho Nippon, dominated the bulk purchasing of cotton for the Japanese spinning industry. These three firms consistently controlled 70–80 per cent of cotton imports. In terms of concentrated buying power – the ability to get favourable prices on bulk shipments – these import companies were without rivals in the US, Indian, and Chinese markets where they purchased most of Japan's cotton supplies. In turn, the concentration of the Japanese spinning sector into a group of dominant integrated companies whose common interests found unified expression in the Japan Cotton Spinners' Association permitted the spinners to secure favourable cotton prices from the cotton importers.[104]

But favourable cotton prices by no means represented the full extent of Japanese competitive advantage in unit cotton costs. Besides enabling the dominant Japanese cotton textile producers to secure lower cotton costs by sharing in the economies of scale of mass cotton buying, the concentration of cotton importing and spinning sectors created the organisational foundations for the success of the cotton cost-cutting strategy based on cotton blending. The task for engineers within Japanese cotton mills was to find ways to use shorter staple, and hence cheaper, cotton without losing the productivity advantages of high-throughput technology. Through blending, the Japanese were able to use a combination of Indian and American (and some Chinese) cotton in spinning counts of yarn for which mills in Britain and the United States would only use American cotton.

The ability and willingness of Japanese cotton importers to make mass purchases in different parts of the world for selected customers enabled the dominant Japanese spinning companies to buy and warehouse four to six months' cotton stock to be sure that each mill had the types of cotton it needed for the mass production of its standard yarn on the basis of its own predetermined cotton blend. In the United States, firms also warehoused large stocks of cotton to ensure the availability of sufficient supplies of the particular staples and grades required for mass production of particular standardised yarns. But, unlike the Japanese firms, US mills used American cotton exclusively, thus (all other things equal) encountering less breaks and downtime in spinning and weaving and thus avoiding the challenges in textile engineering that the Japanese faced.[105] For a given cotton product, the productivity of labour and capital was much higher in the United States than in Japan, but so too were cotton costs.

The Japanese practice of warehousing cotton to mass produce standard yarns departed more dramatically from the practice in Britain, where spinners bought cotton in Liverpool on a weekly basis to produce yarn for orders just received. Whereas Japanese firms sought to cut cotton costs by blending Indian and American cotton, British firms sought to cut cotton costs by altering their weekly selections of cotton on the basis of not only the type of yarn orders in hand but also the short-run price differentials for different grades and staples of American cotton. Whereas the Japanese mills sought to compensate for the use of shorter staple cotton by technological engineering to reduce yarn breakages, the British mills looked to the skills and efforts of operatives to maintain productivity levels in the presence of higher levels of breakage when using inferior cotton.[106]

In Japan, the large-scale purchasing of cotton stocks meant that the firm could not take advantage of short-run changes in cotton price differentials, as was the case in Britain. On the other hand, when Japanese firms perceived pending shortages of cotton before World War I or abnormal downturns in cotton prices in the inter-war period, they bought up large stocks and made windfalls when they eventually sold their yarn.[107] Over the long run, however, the Japanese cotton companies made their profits by the planned co-ordination of the blending of cotton with the engineering of machinery so that the utilisation of inferior cotton would not, as was the case in Britain, obstruct the introduction of effort-saving technology and the achievement of high-throughput production. Ultimately, during the 1920s, the Japanese focus on engineering permitted dramatic increases in spindles and power-looms per worker as well as the rapid diffusion of the automatic loom without sacrificing the cotton-cost saving of blending and apparently without compelling their workers to supply more effort.

(4) *Marketing costs*

Two of the major cotton importers, Mitsui (Toyo Menkwa) and Nippon Menkwa also dominated in exporting Japanese cotton goods. Mitsui alone sold 32 per cent of cotton yarn exports between 1897 and 1912, and 36 per cent of cotton cloth exports between 1906 and 1912. These trading companies secured extensive economies of scope as well as scale in marketing. Indeed, in the China market, their wide-ranging trading activities made them willing to barter Japanese cotton goods for agricultural produce that they could then sell.[108]

Particularly in the large Asian markets, the Japanese trading companies built on the advantages of proximity and greater familiarity with local languages and customs. The fully constructed distribution system was based on trained Japanese staff that, after 1900, increasingly replaced local brokers and eliminated several layers of intermediary commissions and fees before reaching the retailers. As early as 1910, 50 per cent of Mitsui's transactions in cotton goods were carried out directly with Chinese retailers. The presence of on-site sales personnel meant the development of systematic selling methods, the consequent ability to lower risk and prices and lengthen the period of credit, and the maintenance of large stocks in the main trading centres that permitted quicker deliveries, especially in Manchuria where the Japanese controlled banks, railways, and steamship lines.[109]

These dominant trading companies did more than buy cotton and sell yarn and cloth. They financed Japanese mills and the development of new technology. For example, Mitsui provided early financial backing to Toyoda. At the same time, the nine spinning combines that produced 80 per cent of Japanese cotton exports had privileged relations with Mitsui – relations that enabled them to secure large orders that generated the economies of long, standardised runs and favourable marketing terms.[110]

The concentration of the Japanese marketing structure was in stark contrast to the fragmented British marketing system. As Barnard Ellinger, a British export merchant in the 1920s, emphasised after noting the various advantages of Japanese methods: 'On the other hand the present organisation of the industry in Lancashire *prevents* mass production and distribution'.[111] Even more than the higher production costs of shorter runs or the added costs of intermediary payments resulting from the fragmented structure of the British cotton industry, Ellinger focused on the competitive disadvantages of Britain's slower delivery times, which he blamed on the combination of 'production to order' and vertical specialisation, rather than the greater distance to market. Because Japanese exporters required financing for only half as long as British exporters and because (aided by a government subsidy) the Japanese rate of interest was only half as high as the British rate, Ellinger estimated that a 1 per cent change in the bank rate had the equivalent unit cost impact of a 10 per cent change in the wages of weavers in the production of dyed cloth.[112] Indeed, even greater distance to market did not necessarily handicap the Japanese cotton industry. For example, because of Japanese economies of scale and scope in worldwide trading along with government subsidies for the extension of Japanese shipping routes, when in the early 1930s Japan took Turkish market share in cotton goods away from Britain and Italy, the shipping charges from Yokohama to Istanbul were about the same as from Trieste to Istanbul.[113]

(5) *Administrative costs*

Given their privileged relations to the trading companies, the dominant firms were able to produce a variety of products achieving standardisation and long runs in particular mills. But for a dominant firm to co-ordinate the activities of a growing number of mills required an elaborate managerial structure. To develop the requisite organisational capabilities, the dominant cotton companies made considerable investments in training university-educated engineers to occupy management positions.[114]

With a committed corps of managers and developed administrative procedures, the dominant firms were able not only to increase the number of production units but also to disperse them geographically to take advantage of favourable labour conditions in different regions. The ability to administer geographically dispersed production units enabled the cotton companies to locate new mills in areas where land was less expensive and labour supplies more accessible. After 1910 these firms built spinning mills not only in Japan but also in China to take advantage of cheaper labour in the production of the coarsest counts of yarn.[115]

As their managerial capabilities enabled the emergence of ever more dominant firms in spinning yarn for both home and abroad as well as in weaving cloth for export, these firms enhanced the internal career opportunities for the most promising technologists, thus helping to ensure the long-term retention of their technical and managerial services and providing the firms with greater incentives to invest in the capabilities of these key personnel. Although these investments further increased the already high fixed costs of the dominant Japanese cotton firms, they possessed not only the technological and marketing capability but also the administrative capability to transform these high fixed costs into low unit costs, and gain, as they did during the inter-war period, sustained competitive advantage.

V

Explanations of Japanese Success

This summary of the dynamic evolution of the Japanese cotton industry in the first decades of this century and the emergence of Japanese competitive advantage suggests that Britain's competitive disadvantages in the 1920s cannot be attributed *simply* to low-wage competition and tariff protection abroad, as the new economic historians have claimed.[116] Low wages did contribute to Japan's competitive advantage over Britain. But low wages cannot explain why it was Japan rather than India that rose to international dominance. Tariff barriers did allow the development of the domestic manufacturing sector in Japan. The long-run impact of tariff protection, however, was not simply to keep British goods out of Japan but also to foster the development of technology suitable for Japanese conditions. By the late 1920s the development and utilisation of the new technologies permitted the Japanese cotton industry to dominate in open markets.

This development and utilisation of technology occurred, moreover, within a much more planned and co-ordinated structure of business organisation than that which characterised the British cotton industry. Market co-ordination of the specialised division of labour had enabled the British cotton industry to rise to international dominance in the nineteenth century. But, confirming what we already know from the work of Alfred Chandler about the institutional evolution of more capital-intensive industries in Germany and the United States,[117] the Japanese experience illustrates the growing importance for international dominance in the twentieth century of planned co-ordination, even in a relatively labour-intensive industry such as cotton textiles.

During the inter-war period, the British cotton industry was able to continue to compete for a time in certain markets by reaping the benefits of its prior accumulation of productive resources – basically by living off its invested capital. But the organisational structure of the Japanese industry was in striking contrast to the fragmented and market-co-ordinated structure of industrial organisation that the British cotton industry inherited from its era of international dominance and that would persist into the second half of the twentieth century. On the basis of this market co-ordinated structure, the British industry continued during the inter-war period to use technologies which, by virtue of technological developments abroad, had become low-throughput methods that had long since exhausted their effort-saving potential.

For lack of a perspective on the interaction of organisation and technology in the process of economic development, the new economic historians have had problems recognising the importance of planned co-ordination in the rise to dominance of the Japanese cotton industry, and the implications of the organisational character of the Japanese challenge for the structural difficulties that the market co-ordinated British cotton industry faced in responding to the new competition. Sandberg's 'explanation' of Lancashire's competitive decline is a case in point. He argued:

> The dynamic version of [the] comparative advantage argument is that Great Britain slowly lost the relative advantage she had

> obtained from her early start in cotton textiles, principally because she began to accumulate capital and develop other industries. The effect of this process was to make labor relatively scarce and relatively expensive. Great Britain's comparative advantage shifted into more and more capital- and skill-intensive industries. Eventually it became possible for a peasant economy like Japan's to expand its comparative advantage from raw silk and other agricultural products to include low-capital and skill-intensive manufacturing. The result was the development of the Japanese cotton textile industry.[118]

The basic problem with the 'scarce and expensive labour' explanation of the decline of the British cotton industry is that high levels of unemployment plagued the British economy in general and the cotton industry in particular during the inter-war period when the industry lost its markets. Indeed, in the face of the new competition, the actual problem that confronted the British cotton industry during this period was not that other more capital-intensive and skill-intensive sectors were draining it of 'scarce' economic resources but, on the contrary, as industry observers such as John Maynard Keynes recognised, that existing productive resources were not leaving the industry quickly enough.[119] Nor does Sandberg's argument tell us why it was during the inter-war period that Britain lost the advantage of its 'early start' when, as evidenced by the experiences of Germany and the United States, the rise of the capital-intensive industries of the second industrial revolution had begun in the last quarter of the nineteenth century.

As for the 'cheap labour' explanation of Japan's 'comparative' advantage, Sandberg himself went on to recognise that 'Japan was certainly not the country with the world's relatively most abundant supply of labor'. In answer to his own question, 'Why was Japan more successful than, for example, India, China, or tropical Africa?', he suggested 'the supply of entrepreneurship and management skill together with the adaptability of the work force to factory conditions'. His answer is consistent with the tendency of economists concerned with estimating differential rates of economic growth to define the 'residual' as everything that commonsense tells them is important but, for lack of a theory of economic development, they can neither measure nor understand. Sandberg did recognise the need to explain the residual when he asked why Japan generated such productive human resources when other low-wage countries did not. But, implicitly admitting to the limits of his static theoretical perspective, he responded that 'to discuss why this is so would be to write a textbook on the problems of economic development'.[120]

From our perspective, the 'textbook' – that is, a generally accepted consensus on the dynamics of economic development – is precisely what modern Anglo-American economics both lacks and needs. It is impossible to understand changes in international competitive advantage, whether in cotton textiles or any other industry, without making the problem of economic development central to economic analysis. For only then can we analyse how, over time and under certain social conditions, Japan developed and utilised its productive resources in ways that firms and industries operating under different social conditions could not.

From a developmental perspective, what stands out in the success of the Japanese cotton industry is the importance of planned co-ordination of economic activity, not only within dominant enterprises but also within the industry as a whole. Within the dominant 'spinning' companies, planned co-ordination occurred through the vertical integration of spinning and weaving. Within the industry as a whole, planned co-ordination occurred under the leadership of the dominant 'spinning' and trading companies. In response to Lazonick's earlier arguments concerning the role of vertical specialisation in the decline of the British cotton industry, Saxonhouse and Wright have argued that the vertical integration of spinning and weaving was not an important organisational characteristic of the Japanese cotton industry in its rise to international dominance. Specifically, they took issue with Lazonick's statement that 'movements toward vertical integration, horizontal concentration, and top–down managerial co-ordination characterized high-throughput producers in the United States and Japan', on the grounds that the statement did not apply to Japan. According to Saxonhouse and Wright:

> in 1911 more than 80 per cent of Japanese yarn was sold rather than woven by the spinning firm, a degree of vertical specialization which seems to have exceeded Lancashire's. Throughout its rapid capture of world markets in the 1920s and 1930s, the Japanese industry never wove more than 30 per cent of its yarn on a vertically integrated basis. It is difficult to see how the British decline can be attributed to industrial structure, when the same industrial structure was featured by her chief international rival.[121]

The discussion of the sources of Japanese competitive advantage has made clear the problem with the Saxonhouse–Wright argument. It fails to recognise the movement to vertical integration in the *export-oriented* sector of the Japanese cotton industry as it passed from the pre-war phase when its main export was yarn to the handloom weavers of India and China to the phase of cloth exports by vertically integrated producers – a phase that had been gathering momentum since the turn of the century but took off during World War I. Most of the vertically integrated export firms had been major specialised spinning companies during the yarn export phase of the industry's growth. These same firms, still generally called 'spinning' companies, later added looms to their mill operations to compete for international cloth markets. The weight of yarn exports peaked in 1915, and during the 1920s fell off dramatically while the volume of cloth exports rose steadily.[122]

In 1897 the ten largest spinning firms had 34 per cent of the industry's spindles. But in 1913 the ten largest had 88 per cent and in 1928 80 per cent. In 1897 only three of the 10 largest cotton spinning firms in the Japanese industry possessed looms, and for all 10 firms the spindle-loom ratio was 289:1. By 1913 seven of the 10 largest firms had looms, and the spindle-loom ratio for all 10 was 108:1. By 1928 all 10 largest were vertically integrated, their looms all of the wide variety designed to produce cloth for foreign markets. Their combined spindle-loom ratio had fallen to 107:1, although the spindle-loom ratio for all spinning companies was only 87:1. In addition to exporting cloth, the largest spinning companies were the main suppliers of yarn to the specialised weavers who, with their narrow looms, produced primarily for the home market and as well as Korean markets (which they had captured even before the war). By 1938 the spindle-loom ratio in the 10 largest spinning companies had risen to 120:1 as spinning mills increased the supply of low-cost, standardised yarn to an expanding specialised weaving sector that had begun to adopt automatic looms and that was able to participate to some extent in the rapid growth of the Japanese cotton industry's export opportunities.[123]

In 1937, when the Japanese cotton industry was at the height of its international dominance, there were 7,668 mills in the independent weaving sector, with an average of 41 looms each, while the 114 mills that integrated spinning and weaving had an average of 877 looms each. The independent weavers accounted for 61 per cent of the industry's total volume of cloth production, while exports of yarn to weavers abroad accounted for just over 3 per cent by weight of the industry's yarn production.[124] Hence Saxonhouse and Wright may not be far off the mark to argue that 'in the 1920s and 1930s, the Japanese industry never wove more than 30 per cent of its yarn on a vertically integrated basis'.[125]

But this statistic tells us little about how the Japanese industry captured world markets. According to Pearse, writing in early 1929, 'spinning-weaving mills, affiliated with the Japan Cotton Spinners' Association, represent roughly 50 per cent of the whole country, and they are responsible for more than 75 per cent of the export trade as it is in these mills that mass-production methods, with specialisation of work, have been introduced'.[126] Moreover, in so far as the specialised weaving sector contributed to Japan's exports, the supply of their yarn was co-ordinated by the highly concentrated spinning companies and the sale of their cloth by the highly concentrated trading companies. As we have seen, the spinning and trading companies, although financially separate entities, had close, long-term dealings with one another, these relations providing the basis for the planned co-ordination of the vertical structure of the industry, even when the specialised weavers were involved.[127] It is impossible, therefore, to consider the organisational and technological character of the effective Japanese challenge to British markets in the inter-war period without disaggregating the Japanese cotton industry into its export-oriented and domestic-oriented sectors, and even when that is done, without recognising the Japanese organisational innovation in planned co-ordination even across legally distinct firms in the vertical chain of production and distribution.

VI

Explanations of the British Response

How did the British cotton industry respond to the new competition? Sandberg argued that the industry's response was constrained by its 'concentration in markets that contracted very rapidly between the World Wars – mainly, India, China, Turkey, and Egypt – and that, particularly during the 1930s, these markets became highly protected.[128] In general, the inter-war period saw a sharp decline in the percentage of yarn and cloth production (measured in terms of the weight of cotton consumption) entering world trade – from 28 per cent in 1910–13 to 23 per cent in 1926–28 to 16 per cent in 1936–38. Sandberg also recognised that, primarily because of Japanese competition, Britain's share of world production fell from 20 per cent in 1910–13 to 12 per cent in 1926–28 to 9 per cent in 1936–38.[129] Even if the British cotton industry had remained competitive with Japan, he argued, it would have had to contract substantially in the face of protectionism and import substitution strategies abroad.

As indicated by our argument concerning the importance of the low-income markets for the pre-war expansion of the British cotton industry, we agree that, even had the industry had the most modern plant and equipment, it could not have maintained its 1913 size in the face of the continuing world-wide expansion of cotton textile capacity. But the ways in which the British cotton industry had expanded its capacity and remained competitive during the pre-war period made it more vulnerable to the loss of markets in the post-war period and made the process of adjustment – the contraction of supply and the modernisation of the remaining industry – all the more difficult. For, as we have seen, the pre-war expansion not only extended the industry's reliance on its traditional technologies but also increased the degree of vertical specialisation of spinning, weaving, and marketing and the number of firms competing with each other at each vertical level. As Lazonick has shown, in the inter-war period and beyond these organisational characteristics of the industry posed institutional impediments to the restructuring of the British cotton industry on a smaller, but technologically dynamic, scale.[130]

Guided by the belief in the economic efficacy of market co-ordination, Sandberg's work did not contemplate that the organisational basis for international competitive advantage in the twentieth century might require movements away from market co-ordination toward planned co-ordination of specialised divisions of labour. Sandberg reasoned that 'a mass installation of automatic looms in Lancashire prior to World War I would probably have resulted in a worse situation than that which actually occurred'.[131] He might have added, as economists often do, 'all other things equal'. For Sandberg's statement implicitly assumes that 'a mass installation of automatic looms' would have occurred on the basis of the British cotton industry's fragmented industrial structure and hence subject to the same organisational constraints on the development and utilisation of high-throughput production methods that affected the vertically specialised firms that relied on the traditional technologies. Yet the evidence from Lancashire is that a firm such as Ashton Brothers – a firm that had originated in the eighteenth century, that integrated spinning, weaving, and marketing, that exported relatively high-quality goods to China, and that introduced half of the automatic looms of the entire British cotton industry up to 1913 – was able to remain technologically dynamic and economically successful between the wars and after World War II.[132]

Sandberg recognised that, in so far as the immobility of the industry's capital stock and its workforce compelled existing manufacturers and workers to take lower returns on their capital and labour, the British cotton industry could remain competitively viable even as it lost competitive advantage.[133] But, beyond the possibility of this adaptive response, Sandberg contended that the rise of low-wage competition and tariff barriers meant that 'Lancashire's decline after World War I was principally due to causes beyond her control'.[134] If by 'Lancashire', Sandberg meant the individual owners and managers of the industry's 2,000 spinning and weaving firms and 1,000 marketing firms acting autonomously, then he was undoubtedly correct to argue that the decline of their industry was beyond their control. But subsequent research has explored the *collective* responses to the decline of the industry, and has sought to analyse why even the collective responses that did occur did not eliminate the horizontal and vertical fragmentation of the industry and create the organisational foundations for the introduction of the high-throughput technologies.

As J.H. Bamberg has recently analysed in detail, the most important collective response was the formation of the Lancashire Cotton Corporation (LCC) by the Bank of England in 1929.[135] At that time, the LCC's first managing director declared that 'the horizontal amalgamation is of no use to Lancashire; it must be vertical'.[136] By 1930 the LCC had amalgamated 96 firms that possessed one-fifth of the spinning capacity in the British cotton industry. The amalgamation centred on the 'American' section of the industry, which was the hardest hit by the rise of the new competition. In the process of formation, spinning managers and owners who did not want to lose control over their individual firms obstructed and raised the costs of horizontal amalgamation. After the amalgamation, those managers and owners whose firms, by virtue of their over-indebtedness to the British banking system, were forced to amalgamate in the LCC, refused to accede to centralised attempts by the LCC to rationalise its capacity to achieve long production runs, as for example the large spinning combines in Japan were able to do. Ultimately by the end of the 1930s, the LCC did manage to shed its most inefficient capacity and become profitable. By that time, however, it had definitively abandoned efforts to become a vertically integrated firm. Instead the LCC chose to sell its yarn to the specialised weavers who proliferated in the industry.

If Saxonhouse and Wright have misunderstood the organisational character of Japan's successful challenge to British competitive advantage in the cotton industry, they have also misconstrued the organisational constraints on the British industry's response. In their own response to Lazonick's criticisms of their arguments that British spinning managers were not constrained by the structure of vertical specialisation to adopt mules rather than rings for the spinning of weft yarn, they claimed that Lazonick failed to use 'the term "constraint" in a consistent or rigorous way', and hence that the apparent clarity of his model of the relation between constrained optimisation and choice of technology 'fades and then vanishes when we pursue the question concretely'.

> Exactly what was it that blocked Lancashire's path to ring spinning? Lazonick's answer is 'vertical specialization', but this only replaces one question with another: what was it that blocked the path to vertical integration? Was this organizational structure a binding 'constraint' on individual firms? The difficulties noted by Lazonick in his present comment relate exclusively to the case of *existing* spinning firms attempting to sell ring-spun weft yarn in the open market. But why could not these firms integrate forward into weaving, or why could not new integrated firms replace the constrained specialized spinners and weavers? These are the economic questions raised by Lazonick's formal analysis, but to date he has not confronted them explicitly.[137]

Saxonhouse and Wright cited Lazonick's 1983 *Business History Review* article on the constraining influences of British cotton's fragmented industrial organisation on the horizontal and vertical reorganisation of the industry that was a precondition for adopting the new high throughput technologies. But the very questions that Saxonhouse and Wright posed are the ones that, in that article, Lazonick asked and answered. Saxonhouse and Wright might disagree with Lazonick's answers to 'the economic questions raised by [his] formal analysis'. But that is a very different position than their unfounded allegation that he had not confronted these questions explicitly.

As for their own perspective, Saxonhouse and Wright formulated the question too narrowly in asking 'what . . . blocked Lancashire's path to ring spinning'. The empirical basis for Lazonick's argument was that with the diffusion of the automatic loom and the subsequent development of high-speed spinning, winding, and warping processes, the effective utilisation of high-throughput production processes to transform high fixed costs into low unit costs required the planned co-ordination of the flow of work from purchased cotton to sold cloth. Perhaps because their own research into cotton textile technology had itself been vertically specialised on the choice of *spinning* technology, Saxonhouse and Wright fundamentally ignored the interconnections between the advances in weaving and spinning as mass production technologies, as well as the need for mass marketing to create the incentive for firms to invest in the more capital intensive, high-throughput technologies. As a result they have neither understood the role of planned and co-ordinated organisation in developing and utilising the new mass-production technologies in Japan nor the constraints that the horizontally fragmented and vertically specialised structure of the British cotton industry imposed on the adoption of these technologies.

Indeed, Saxonhouse and Wright contended that Lazonick was wrong to argue that vertical integration posed a 'constraint' on the decision-making of Lancashire's managers on either the choice of technology or organisation. On the technology question, they argued that the existence before World War I of ring-frames that could spin yarn onto paper tubes instead of wooden bobbins overcame the transportation cost constraints of shipping wooden bobbins from the spinning mill to the weaving mill that vertical specialisation had imposed on the Lancashire industry.[138] As in the case of Clark, however, Saxonhouse and Wright took Sandberg's static framework of the major factor cost constraints on the more rapid adoption of the ring-frame and imposed it on Lazonick's dynamic analysis. As stated earlier, Lazonick corrected Sandberg's factor cost estimates, in part by showing that the cost of transporting the wooden bobbins was greater than Sandberg thought. But at the same time (as even Saxonhouse and Wright at one point recognised), Lazonick argued that, considering the technical interconnection of spinning and weaving technology, even on the traditional technologies that Lancashire used, the major constraint that Lancashire faced in adopting the new high-throughput technologies was organisational. The diffusion of these technologies required interconnected – planned and co-ordinated – decision making on the adoption of spinning methods that produced break-resistant yarn and weaving methods that were only cost effective when using break-resistant yarn. The requisite planned co-ordination could not occur on the basis of the vertical specialisation of spinning and weaving that predominated, and indeed that in the pre-war period became more predominant, in Lancashire.[139]

In their critique of Lazonick, Saxonhouse and Wright have argued that the pre-war expansion of the industry did not significantly increase its vulnerability to post-war collapse because ring spinning only became a 'dominant technology' as the result of technological developments – most notably high-draft spinning – that occurred after 1913. Once ring spinning became clearly dominant in the mid-1920s the British cotton industry did not make any further investments in new mules. Hence, in contrast to the Lazonick–Mass thesis, Saxonhouse and Wright concluded that the prior investments in mules, made when ring spinning was not the 'dominant technology', cannot be held responsible for the loss of British markets in the 1920s.[140]

Aside from noting that Lazonick raised the 'broader problem of co-ordinated decision-making, or "technical interrelatedness" between ring spinning and numerous complementary changes in weaving and winding machinery',[141] Saxonhouse and Wright have ignored the relation between the evolution of spinning and weaving technology. Yet the analyses of Lazonick and Mass have stressed the growing importance of the technological interrelatedness of spinning and weaving in the rise to dominance of the new high-throughput technologies that tranformed raw cotton into cotton cloth.[142]

On its own, the main advantage of the ring-frame over the mule was that it permitted the use of low-wage, unskilled labour in the spinning process. The main disadvantage of ring spinning (again on its own) was the need to use longer staple and superior grade cotton to spin a given count of yarn to achieve the same level of productivity as the mule. The main advantage of ring yarn when used in conjunction with the weaving process was that, because it was stronger than mule yarn of equal cost, it broke less often. For a given amount of labour effort, less breakages yielded higher output per loom. In Lancashire, however, where the weavers' union generally limited the number of power-looms per weaver to four (as compared with eight in the United States) and where weavers were willing to supply their effort to keep the looms in motion and their earnings up, the weaving employer had little interest in purchasing yarn that minimised breakages and simply permitted weavers to achieve the same level of earnings with less effort. Hence the structure of labour–management relations and work organisation in Lancashire weaving mitigated the prime productivity advantage of ring yarn in the weaving process.

Quite apart from the problem (highlighted in the Sandberg–Lazonick exchange) of shipping wooden bobbins from a specialised spinning mill to a specialised weaving mill, the main disadvantage of ring spinning when used in conjunction with the power-loom was the inverse relation between the amount of yarn on a *shuttle-ready* bobbin and the level of ring spinning productivity for a given quality of cotton. Small amounts of yarn on the shuttle-ready bobbin meant the need for the weaver to replenish the loom shuttle more frequently. Weft changing was the most labour-intensive part of the weaver's job, and more frequent weft changes inevitably reduced productivity no matter how hard the weaver worked. The alternative was to rewind the ring weft yarn onto smaller shuttle bobbins that, by virtue of being smaller, held a larger amount of weft yarn. But, when used with the break-prone yarn that British spinning firms (in their efforts to reduce cotton costs) tended to produce, rewinding was prohibitively expensive.[143]

When used in conjunction with *automatic* looms instead of power-looms, however, the relative advantages and disadvantages of ring spinning took on wholly different dimensions. The main advantage was that the need in any case to use higher quality cotton on the ring-frame to maintain productivity meant that ring spinning provided the weaving process with a more break-resistant yarn than mule spinning. And minimising the number of breaks per unit of time was critical to achieving both a high number of machines per worker and a high level of output per machine on the automatic loom. At the same time, with the move from power-looms to automatic looms, the main disadvantage of ring yarn – the small amount of yarn on a shuttle-ready bobbin – disappeared because the innovation of the automatic loom was the automatic replenishment of the shuttle with weft. Indeed, this innovation put an even greater premium on break-resistant yarn because of the high level of tension placed on the yarn during the first pick after the shuttle had been reloaded.[144]

It was not high-draft spinning but the diffusion of the automatic loom that ensured that ring spinning would become the dominant spinning technology. High-draft spinning (which permitted the mill to dispense with some intermediate machines for attenuating and twisting the cotton into rovings that then became the material input on the spinning frame) worked better with stronger yarn. Hence, high-draft spinning gave the greatest advantages not only in transforming raw cotton into yarn but more importantly when ring spinning was being used to prepare break-resistant yarn for automatic looms. Indeed, high-draft spinning was just one of a number of new high-speed technologies, including high-speed winding and high-speed warping, that were developed during the first two decades of the twentieth century that were of the greatest benefit when using the strong ring yarn required for automatic looms. As a result of these improvements, it became the practice to rewind all weft yarn for use in high-speed looms for purposes of quality control; 'cleaning and clearing' weak yarn in the winding process was much less costly than mending it in the weaving process, not least because frequent yarn breakages undermined the enormous labour-displacing possibilities of the automatic loom. In addition, the rewinding of weft yarn saved doffing labour and downtime in the spinning process; the ring-frame did not have to spin shuttle-ready packages, and hence larger yarn packages could be spun.[145]

Hence, where, as was especially the case in both the United States and Japan, ring spinning emerged as an *element* of the new high-throughput textile technology by the 1920s, it was because cotton industries, and indeed cotton firms, had undertaken co-ordinated investments in ring-frames and automatic looms as well as in a series of supplementary high speed processes, all of which required the use of break-resistant yarn. Lancashire's vulnerability in the 1920s was not only that its cotton industry was so highly dependent on markets in the low-income areas of the world, but also that it had maintained its share of these markets in the face of the new competition by means of a cotton cost cutting strategy on its traditional technologies that moved the industry even further *away* from the adoption of high throughput, effort-saving, production methods. Lancashire's competitive problem in the 1920s was not only that it had exhausted the cost-cutting potential of its effort-using strategy but also that it now faced global competition from the Japanese who, during the first two decades of the twentieth century, had been putting their own unique high throughput methods in place.

From the late 1920s, when many observers of the British cotton industry began to recognise that its pre-war markets had been definitively lost, the incompatibility between the fragmented and specialised structure of industrial organisation on the one hand and the diffusion of the high-throughput technologies on the other did constrain the British cotton industry's response to its loss of competitive advantage. What was the social character of this constraint? As evidenced by the title of their rejoinder to Lazonick, Saxonhouse and Wright did not believe that vertical specialisation constrained the diffusion of the new technologies (or at least, from their 'vertically specialised' technological frame of reference, the diffusion of ring spinning).[146] They quoted Lazonick (from his 1984 rejoinder to Sandberg's response) that 'the overriding constraints on vertical integration in the British cotton industry were the lack of managerial skills and the *individualistic attitudes on the part of Lancashire's specialised managers themselves*', noting 'emphasis in original'. They went on to contend that:

> saying that managers are 'constrained' by their own 'attitudes' stretches the meaning of the term beyond reasonable limits and makes the 'institutional rigidity' hypothesis indistinguishable from the more venerable diagnosis of 'entrepreneurial failure'. If, as we argued, Lancashire managers actively believed that the mule was a superior technology and vertical specialisation a superior form of organisation, what does it contribute to argue that their behaviour was 'constrained' by these beliefs?[147]

Saxonhouse and Wright continued by recognising that Lazonick did not argue that these individualistic attitudes impeded the expansion of the industry before World War I or that pre-war Lancashire managers could have or should have forseen the loss of markets in the 1920s. How then did the 'individualistic attitudes' of Lancashire's managers constrain technological change?

In their interpretation of Lazonick's argument, Saxonhouse and Wright made two basic errors, both of which stemmed from a failure to assimilate Lazonick's analysis of the role of organisational structure in the British cotton industry's postwar decline. First, they quoted Lazonick's reference to 'individualistic attitudes' from his exchange with Sandberg, an exchange which was primarily concerned with the empirical question of the choice of spinning technology before the war. But Lazonick's statement about the constraining influence of 'the lack of relevant managerial skills and individualistic attitudes' specifically referred to his analysis of the postwar experience when markets were lost and, as in the case of the Lancashire Cotton Corporation, attempts began to be made to reorganise the industry. Before the war, the same lack of managerial skills and the same individualistic attitudes constrained specialised

Lancashire managers from participating in vertical integration. But because, for the reasons we have outlined, the industry was able to remain competitive on the basis of its traditional organisational structures and technologies, these constraints were non-problematic; Lancashire managers could optimise subject to these constraints and still remain competitive in international markets. After the war they could not remain competitive, and it was then that their very presence in the industry and, specifically, their resistance to giving up control of their individual firms, constrained attempts by others at industrial reorganisation.

Second, even in the sentence that Saxonhouse and Wright quoted, Lazonick did not emphasise the words 'individualistic attitudes', as they claimed. Given their focus on the 'beliefs' of British managers, the error is not incidental. As is clear from the context of the 1983 *Business History Review* article, Lazonick saw the lack of relevant managerial skills and the individualistic attitudes as reinforcing one another.[148] Specialised Lancashire managers lacked the general managerial skills required to participate in the reorganisation of the industry, and hence clung to control of their specialised firms as their means of livelihood. As a result they never did acquire the relevant skills to manage a high-throughput, vertically integrated enterprise.

Especially in the weaving sector, which was much more resistant to horizontal reorganisation than spinning, the individualistic attitudes of managers reflected less a belief that (to use Saxonhouse and Wright's words) 'vertical specialisation [was] a superior form of organisation' (and certainly not the belief that 'the mule was a superior technology') but much more a desire, and because of their limited skills perhaps even a need, to maintain their independent means of support. 'Very much in the tradition of the handloom weavers a century before', Lazonick argued, 'the owners of these firms hung on to their businesses at extremely low profits in order to maintain their relatively independent status'.[149] The persistence of this specialised, and largely written off, capacity into the 1960s reduced the incentive for others who did have the relevant managerial skills to invest in high-throughput technologies on the basis of vertically integrated organisational structures. Hence as late as 1955 only 12 per cent of all looms in Lancashire were automatic.[150] The British industry became less vertically specialised during the 1950s, but only because it became increasingly difficult for its family firms with their outdated machinery to hang on in the face of foreign competition not only from 'low wage' (but more technologically advanced) competitors but also from high wage, high-throughput competitors.

VII

The Analysis of International Competitive Advantage

The analysis of changes in international competitive advantage requires a perspective that can comprehend the dynamic interaction of organisation and technology in transforming high fixed costs into low unit costs. An adherence to the static, ahistorical approach to economic analysis that pervades 'modern' economic thinking renders one ill-equipped to analyse the sources of international competitive advantage and disadvantage. But whatever the grip of neoclassical economics on the new economic history some 20 years ago, we believe that most economic historians now recognise the need for an analytical approach to the development process that can comprehend the processes of organisational and technological change. We would hope that the arguments that we have made here will serve to reinforce such an intellectual tendency.

More than that, we would hope that our analysis of the sources of competitive advantage and disadvantage can serve as a framework for, and impetus to, further research into changes in international leadership in a wide array of industries. From our perspective, the analysis of changing industrial leadership presents a special challenge for business historians because an understanding of the historical evolution and economic impacts of business organisation is at the heart of the analysis of competitive advantage. By its very nature, the study of business organisation as a determinant of international competitive advantage compels an analysis of the microeconomic foundations of macroeconomic outcomes. It is precisely in its comprehension of the inner workings of the business enterprise that mainstream economics has failed so miserably, and that 'business historians' – social scientists who take business history seriously – can make the most profound contributions to economic analysis.

Beyond the methodological issues, our analysis of the decline of the British cotton industry in the face of Japanese competition has implications for economic ideology as well. We have argued that the problem of the British cotton industry after World War I was an outmoded economic individualism in an era that required collective response. The prior success of the individualistic structures of business organisation stood in the way of institutional transformation toward a more collective capitalism. Our outline of the interaction of organisation and technology in the rise to dominance of the Japanese cotton industry emphasises the collective character of the competitive challenge that Britain faced.

In the 1990s Anglo-American economists and historians are beginning to understand the competitive realities of the Japanese version of collective capitalism. The case of the cotton industry suggests that the ‘Japanese miracle’ did not begin in the 1950s, as is commonly believed. Widely recognised as the sources of Japan’s competitive advantage in automobiles and electronics in the post-World War II decades were the major institutions – concentrated organisation in production and distribution in combination with small-scale enterprise where economically feasible, horizontal and vertical co-ordination across legally distinct firms, intensive research and development, the planned co-ordination of personnel to develop and utilise human resources, a developmental state – that contributed to the rapid rise to international dominance of the Japanese cotton industry between the wars. To study the rise of Japan and the decline of Britain in cotton textiles in the inter-war period is to gain valuable insights into the historical foundations of Japanese competitive advantage more generally in the last half of the twentieth century.

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NOTES:

1. The main contributions to the debate have been L. Sandberg, *Lancashire in Decline* (Columbus, 1974); W. Lazonick, ‘Competition, Specialisation, and Industrial Decline,’ *Journal of Economic History*, Vol.XLI No.1 (1981); idem, ‘Factor Costs and the Diffusion of Ring Spinning Prior to World War I,’ *Quarterly Journal of Economics*, Vol.XCVI No.1 (1981); idem, ‘Industrial Organisation and Technological Change: The Decline of the British Cotton Industry,’ *Business History Review*, Vol.LVII No.2 (1983); W. Lazonick and W. Mass, ‘The Performance of the British Cotton Industry, 1870–1913’, *Research in Economic History*, Vol.IX (1984); L. Sandberg, ‘The Remembrance of Things Past: Rings and Mules Revisited,’ *Quarterly Journal of Economics*, Vol.XCIX, No.1 (1984); W. Lazonick, ‘Rings and Mules in Britain: Reply,’ *Quarterly Journal of Economics*, Vol.XCIX No.1 (1984); G. Saxonhouse and G. Wright, ‘New Evidence on the Stubborn English Mule and the Cotton Industry, 1878–1920,’ *Economic History Review*, second series, Vol.XXXVII No.4 (1984); W. Lazonick, ‘The Cotton Industry,’ in B. Elbaum and W. Lazonick (eds.), *The Decline of the British Economy* (Oxford, 1986); W. Lazonick, ‘Stubborn Mules: Some Comments,’ *Economic History Review*, second series, Vol.XL No.1 (1987); G. Saxonhouse and G. Wright, ‘Stubborn Mules and Vertical Integration: The Disappearing Constraint?’ *Economic History Review*, second series, Vol.XL No.1 (1987); G. Clark, ‘Why Isn’t the Whole World Developed?: Lessons from the Cotton Mills,’ *Journal of Economic History*, Vol.XLVII No.1 (1987); M. Wilkins, ‘Efficiency and Management: A Comment on Gregory Clark’s “Why Isn’t the Whole World Developed?”’ *Journal of Economic History*, Vol.XLVII No.4 (1987); G. Clark, ‘Can Management Develop the World?: Reply to Wilkins’, *Journal of Economic History*, Vol.XLVIII No.1 (1988). See also B. Elbaum, ‘Cumulative or Comparative Advantage?: British Competitiveness in the Early Twentieth Century’, *World Development*, forthcoming 1990. For an admirable summary of the more general debate on entrepreneurial performance in Britain in the late nineteenth and early twentieth centuries, see P.L. Payne, *British Entrepreneurship in the Nineteenth Century*, (2nd ed. 1988), pp.43–60.
2. For elaborations of our perspective, see W. Lazonick, *Business Organisation and the Myth of the Market Economy* (Cambridge, 1991), Ch.1; W. Mass, ‘Mechanical

and Organisational Innovation: The Drapers and the Automatic Loom', *Business History Review*, Vol. LXIII No. 4 (1989); W. Mass, 'Decline of a Technological Leader: Capabilities, Strategy, and Shuttleless Weaving, 1945–1974', *Business and Economic History*, second series, Vol.XIX (1990).

3. S. Pollard, *The Genesis of Modern Management* (Harmondsworth, 1968); W. Lazonick, *Competitive Advantage on the Shop Floor* (Cambridge, Mass., 1990), Ch.1.
4. Lazonick, *Competitive Advantage*, Chs.3–4.
5. See D.A. Farnie, *The English Cotton Industry and the World Market, 1815–96* (Oxford, 1979), Chs.2 and 8. On the nineteenth-century development of the British cotton industry more generally, see the excellent synthesis in S. D. Chapman, *The Cotton Industry in the Industrial Revolution*, (2nd ed., 1987), and the select bibliography therein. For recent research on labour and labour relations in British textiles, see J.A. Jowitt and A.J. McIvor (eds.), *Employers and Labour in the English Textile Industries, 1850–1939* (1988).
6. K. Burgess, *The Origins of British Industrial Relations* (1975), Ch.4; Lazonick, *Competitive Advantage*, Ch.3–5.
7. Only in the United States did another national industry receive and make use of large numbers of British cotton workers. But in the United States, the occupational and geographic mobility of workers with industrial skills and the (consequent) managerial search for skill-displacing machine technologies meant that a specialised labor force did not reproduce itself in particular localities as was the case in Britain. See W. Lazonick, 'Production Relations, Labor Productivity, and Choice of Technique: British and US Cotton Spinning,' *Journal of Economic History*, Vol.XLI No.3 (1981).
8. Saxonhouse and Wright, 'Stubborn Mules'; G. Saxonhouse and G. Wright, 'Rings and Mules Around the World: A Comparative Study in Technological Change', in G. Saxonhouse and G. Wright (eds.), *Technique, Spirit and Form in the Making of Modern Economies* (Greenwich, Conn., 1984); D.A. Farnie, 'The Textile Machine-Making Industry and the World Market, 1870–1960', *Business History*, Vol.XXXII No.4 (1990).
9. Farnie, *English Cotton*, Ch.2; F.E. Hyde, B.B. Parkinson and S. Marriner, 'The Cotton Broker and the Rise of the Liverpool Cotton Market', *Economic History Review*, Vol.VIII (1955–56). See also M.M. Edwards, *The Growth of the British Cotton Trade, 1780–1815* (Manchester, 1967), Chs.5–6.
10. Lazonick and Mass, 'Performance of the British Cotton Industry'.
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67. Ibid., p.144.
68. Ibid.
69. Ibid., pp.146, 150.
70. Ibid., p.151. Of the countries in Clark's list, only Greece had a lower machine-worker ratio than India, China, and Japan.
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72. Ibid., pp.166–7.
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130. Lazonick, 'Industrial Organization; idem, 'The Cotton Industry'.
131. Sandberg, *Lancashire*, p.205. Ironically, in his study of the resistance of Lancashire to a reduction of surplus capacity and organisational change in the interwar period, Kirby cited Sandberg to argue that the British cotton industry had begun the rapid

adoption of ring spinning for the production of coarse counts prior to the war, and hence that the industry was not technologically laggard during the interwar period. M.W. Kirby, *The Decline of British Economic Power Since 1870* (1981). p.11; idem, 'The Lancashire Cotton Industry in the Inter-War Years: A Study on Organisational Change', *Business History*, Vol.XVI No.2 (1974), pp.152–3. But, as we have seen, Sandberg overestimated the diffusion of ring spinning on coarse counts before the war. See Lazonick, 'Factor Costs', pp.96–9. In his article, Kirby provided a useful overview of the difficulty of organisational change in the inter-war period but betrayed any understanding of the relation between vertical integration and technological change. In his limited discussion of the costs and benefits of vertical integration as inherently the result of 'market failure,' Kirby cited the work of John Jewkes, a long-time proponent of the efficacy of market co-ordination in the British cotton industry and in British industry in general. See J. Jewkes, 'Factors in Industrial Integration,' *Quarterly Journal of Economics*, Vol.XLIV (1930); idem, 'Is British Industry Inefficient?', *Manchester School*, Vol.XIV No.1 (1946); Jewkes and Jewkes, 'Hundred Years of Change'.

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139. Lazonick, 'Industrial Organization'.
140. Saxonhouse and Wright, 'New Evidence', p.519.
141. Ibid., p.515.
142. Lazonick, 'Industrial Organization'; Mass, 'Mechanical'; Lazonick and Mass, 'Performance of the British Cotton Industry'. Despite their focus on choice of technology in Japan and their discussion of both spinning and weaving, Otsuka, Ranis, and Saxonhouse '*Comparative Technology Choice*' Ch.3, did not raise the issue of the interrelatedness of the two processes in achieving high-throughput production.
143. Lazonick, 'Factor Costs', p.102.
144. See note 98.
145. Lazonick, 'Industrial Organization', p.209.
146. Saxonhouse and Wright, 'Stubborn Mules'.
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EUROPEAN COMPETITION IN WOOLLEN CLOTH, 1870–1914: THE ROLE OF SHODDY

By D.T. JENKINS and J.C. MALIN

In the debate about the performance of British industry in the late nineteenth century, the wool textile industry has long been recognised as having fared relatively well, compared with other home staple industries and with its competitors on the continent of Europe.[1] As Table 1 indicates, on the eve of the First World War world exports of wool textiles were dominated by the industries of the United Kingdom, Germany and France. Many other countries exported small quantities of cloth but the three major European producers accounted for nearly 85 per cent of trade. Those same three countries had dominated woollen and worsted cloth exports in the previous three decades. Of the other countries listed in Table 1, several, including Japan, Sweden, Spain and Italy, had only recently expanded their wool textile exports.

The exports of the main European producers and the United States over the period from 1880 are shown in Table 2. In the 1880s and 1890s there were small amounts of woollen and worsted cloth exported from a variety of countries but world trade was overwhelmingly in the hands of the United Kingdom, Germany and France. The United States hardly entered the export market. Other European producers shared only a tiny proportion of the export trade. It is evident from Table 2 that, comparing the early 1880s with the years before the First World War, United Kingdom export performance was superior to that of her main competitors. United Kingdom exports rose by 32 per cent over the period; German exports rose by 13 per cent and French exports declined by 44 per cent. French export decline, both in value and in relation to the other two countries, was continuous from 1880. German trade was better sustained up to 1904 in relation to that of the United Kingdom.

The relative performance of the three dominant trading countries is shown in Table 3. In the 1880s the United Kingdom share of trade rose in comparison to that of Germany. From 1890 to 1904 German exports fared better, but after 1905 the United Kingdom commanded a rapidly increasing share of trade. An implication from Tables 1 and 2 is that the development of world exports of wool textiles was not substantial over the whole period. World trade levels were particularly affected by late nineteenth-century tariff policies. World consumption of wool was increasing more rapidly however with the rising self-sufficiency of consuming countries in the production of cloth. Thus the rate of change of wool textile exports from the United Kingdom, Germany and France

TABLE 1

WORLD EXPORTS OF WOOL TEXTILES
annual averages, 1909–13
£000s

United Kingdom	24,600	Switzerland	536
Germany	12,800	India	173
France	8,200	USA	170
Austria-Hungary	2,800	Spain	150
Netherlands	1,680	Bulgaria	142
Persia	987	Sweden	70
Italy	940	Japan	50
Belgium	585		
		Total	53,883

Source: Committee on Industry and Trade, *Survey of Textile Industries* (1928), pp.173–4.

TABLE 2

WOOL TEXTILE EXPORTS FROM SELECTED COUNTRIES, 1880–1913
£millions

Annual averages	United Kingdom	France	Germany	Austro-Hungary	Belgium	United States
1880–84	18.5	14.7	11.3	2.3	1.1	*
1885–89	20.1	13.9	11.7	2.0	1.0	0.03
1890–94	17.4	12.3	10.9	1.6	0.9	0.04
1895–99	16.5	11.0	10.5	1.6	0.7	0.11
1900–04	15.8	8.7	11.5	1.9	0.6	0.13
1905–08	20.4	8.6	13.5	*	*	0.10
1909–13	24.6	8.2	12.8	2.8	0.6	0.17

* comparable figure not available
Source: Committee on Industry and Trade, *Survey of Textile Industries* (1928), p.173.

has to be understood within the context of the restricted development of international trade. On the rough assumption that the countries listed in Table 2 accounted for 95 per cent of world exports in 1880–84, Britain's share of that trade was 37 per cent. Table 1 suggests her share of trade had risen to 46 per cent in 1909–13. The comparable figures for Germany were 22 per cent and 24 per cent, and for France 29 per cent and 15 per cent.

Thus the performance of the British wool textile industry needs to be explained both in terms of its increased share of world trade

TABLE 3

WOOL TEXTILE EXPORTS FROM THE UNITED KINGDOM, GERMANY AND FRANCE
(proportionate share of each country)

Annual averages	United Kingdom %	Germany %	France %
1880–84	41.6	25.4	33.0
1885–89	44.0	25.6	30.4
1890–94	43.0	26.8	30 3
1895–99	43.4	27.6	28.9
1900–04	43.9	31.9	24.2
1905–08	48.1	31.8	20 2
1909–13	53.9	28.1	18.0

and in relation to its two major competitors, France and Germany. In particular the relative change in the market share, and different performance, of the United Kingdom and France calls for explanation. But the comparison with Germany is also significant, as the supremacy of German wool textiles in export markets, which was being predicted by trade commentators in the 1880s, never really arrived.[2]

The aggregate figures for wool textile trade conceal distinctive differences in the performance of the two major components of the industry – woollens and worsteds. It is realistic to consider these as almost separate industries. They processed different raw materials, both types of wool and other fibres, through different technological processes at all major stages of production. Their final products were aimed at different markets. There was only a small amount of substitutability in the marketplace between woollen and worsted cloths.

There has been much discussion of Anglo-French competition in worsteds. Fashion changes, perhaps partly initiated by the cotton famine and higher cotton prices, worked against the cotton-warped lustre fabrics that had become the mainstay of production in Britain, and for the softer all-wool worsteds of the French industry, woven from dry-spun yarn produced on the mule; yarn which dyed better to brilliant and delicate shades.[3] The French, and to a lesser extent, the German worsted industry outperformed the British industry in the last three decades of the nineteenth century. Some of the British home market was lost to French imports and the British worsted industry suffered a decline in trade to all its major traditional markets. It was much criticised at the time for its lack of adaptation to French competition, and there has subsequently been debate about whether it was lethargic in changing its technology and product to new market conditions. The scale and nature of the problem that the industry faced did not permit easy and quick solutions. The British and French industries had pursued, since the 1840s, very different product development paths, based on different raw materials, technology and labour skills. A rapid conversion to French methods of wool preparation and spinning was simply not feasible. The policy that the British industry pursued, certainly rather slowly initially, of adapting its existing machinery and innovating new products using it, such as worsted coatings, ultimately enabled it to stem continental competition and to prevent further decline in its export trade. Even so, in the early years of the twentieth century, British worsted cloth exports did not recover to anything like the levels of previous years, although trade in tops and yarn, and the buoyancy of the home market provided some compensation.[4]

Thus, reasons for the success of the British wool textile industry, *vis-à-vis* its continental competitors, must be sought primarily in the woollen branch of the industry. A.H. Cole argued that limitations in new wool supplies, in relation to expanding world demand for wool products, affected the conduct of wool manufacture. He suggested that, in the woollen industry both in Europe and the United States, one remedy manufacturers found to new wool shortage was through the employment of the substitute material of recovered wool.[5] It has often been assumed that the British woollen industry fared well primarily through its willingness to use recovered wool and its superior ability in doing so.[6] The discussion that follows considers the significance of recovered wool – shoddy, mungo and extract – to the performance of the British woollen industry and suggests reasons why the British industry gained superiority in this area.

I

The performance, by both volume and value, of the export trade of the woollen sector is shown in Table 4. Before 1890 trade classifications do not permit an accurate division between woollen and worsted cloth. Measurement by length takes no account of significant width increases of cloth woven.[7] Export success was widespread. Empire markets certainly provided a boost to the industry, but in other traditional and new markets British woollen cloth outperformed its continental competitors in the long run.[8] It stood up best in the highly protected United States market. British share, by value, of 'Cloth' (as opposed to 'Dress Goods') imports to the United States rose from 58 per cent in 1885–89 to 66 per cent in 1900–04.[9] The German share over the same period fell from 27 per cent to 23 per cent. The French share fell from 9 per cent to 5 per cent. Britain gained the greatest proportion of trade in the major markets of South America.[10] It dominated woollen cloth imports to Japan. In 1909–13 two-thirds of wool textile imports to Japan were from the United Kingdom. Woollen tissues accounted for 84 per cent of imports of British wool textiles to Japan in 1905, although this was an exceptional war year.[11] Even in the protected markets of continental Europe it managed to sustain a substantial foothold. Increasing trade in woollen yarn added to the success of the industry. The home market

TABLE 4

UNITED KINGDOM EXPORTS OF WOOLLEN AND WORSTED CLOTH, 1890–1931

Annual	Woollen Cloths		Worsted Cloths	
Averages	million yds	£ million	million yds	£ million
1890–94	50.2	5.5	140.0	8.6
1895–99	53.1	5.6	125.7	7.6
1900–04	52.1	6.0	101.8	6.3
1905–09	78.3	9.8	92.8	6.7
1910–13	99.9	13.5	77.1	7.0

Notes: Trade classifications do not permit completely exact division between woollen and worsted cloth. Data excludes some cloth not measured by length.

Source: *Trade and Navigation Returns*.

was successfully defended. Woollen cloth imports rarely exceeded 10 per cent of the volume of exports and on the eve of the First World War the ratio was as little as 2.5 per cent. Whereas in the worsted trade imports rose as a proportion of exports from about 30 per cent in the 1880s to over 80 per cent before the war.[12]

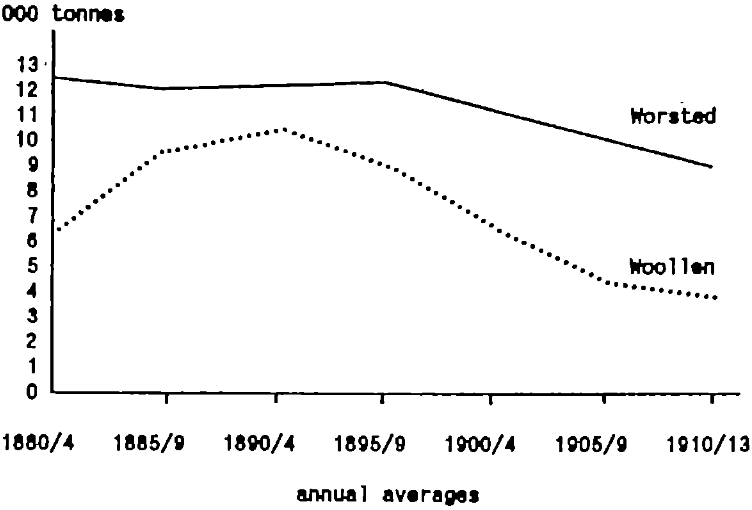
Whilst the export trend for British woollen cloth was firmly upwards from 1890, the French trend was very clearly downwards. The French woollen industry suffered declining business at both home and abroad from the late 1880s (Figure 1). Its home market stagnated through agricultural depression, low population growth, declining real incomes and adverse fashion trends, which favoured all-wool worsted dress goods, velvets and silks. The volume of French woollen cloth exports was halved between 1890 and 1913. Yarn exports provided only little compensation. Most major centres of woollen cloth production in France experienced a decline in value and volume of output.[13]

The German woollen industry fared somewhat better. It expanded rapidly through the middle decades of the nineteenth century, acquiring broader labour skills and producing a wider range of products. It had the benefit of a buoyant home market, aided by rapidly expanding population and urbanisation. Protectionist barriers guarded that market. In the 1880s British manufacturers and trade commentators were gloomily forecasting an onslaught of German woollen cloth on world markets. But the German woollen industry did not subsequently make much progress in dislodging the British industry from its major markets.[14]

The export position of the British woollen industry appears to have been the result of the activities of manufacturers in the West Riding of Yorkshire. The proportion of United Kingdom weaving capacity in Yorkshire increased from 44 per cent in 1867 to 62 per cent in 1904.[15] Wider and faster looms in Yorkshire probably meant that Yorkshire

FIGURE 1

FRENCH EXPORTS OF WOOLLEN AND WORSTED CLOTH, 1880/84–1910/13



accounted for around 70 per cent of the volume of woollen cloth output by the latter date. The decline of the West of England trade continued apace after 1870. By 1904 only 40 relatively small mills survived producing a diverse range of generally high quality cloth. Many of its products were outmoded. Its minor specialities had limited markets. New design inspiration was lacking. Fashion moved against it, except for some new stimulus from outdoor leisure attire.[16] Scotland, the other major centre for the industry, survived better, but still contracted. It benefited from the growth of a male quality fashion market for tweeds but found that American tariffs gradually cut into its high class transatlantic export trade. It showed competence in design and adjustment to fashion, but cheaper Yorkshire tweeds made inroads to its lower and medium quality market at home and abroad.[17]

Whilst other areas were contracting, most sections of the Yorkshire industry fared well. Demand for novelties stimulated the fancy woollens section. Its tweed trade adapted very successfully to the mass lower end of that market. The Yorkshire low woollen trade, although experiencing a fashion movement away from heavier garments, was beneficially influenced by rising population and real incomes; by steady replacement demand for men's working clothes, including probably some substitution of woollen cloth for cotton; by frequent large orders for uniform cloth; and by the new market for travel and leisure cloths. There are no satisfactory estimates for the proportion of Yorkshire woollen cloths that were exported, but one observer believed that two-thirds of production of the main low woollen district of Batley and Dewsbury was exported before 1914. For the British wool textile industry as a whole about 45 per cent of cloth output was exported in the early years of the century.[18]

The different regional specialisms of the British industry required different types of wool and other fibres and had implications for processing methods. A very distinctive feature of the Yorkshire industry was its use of recovered wool. Although there is evidence of a few West of England and South of Scotland firms incorporating shoddy and mungo in their blends, it would appear that recovered wool was of little significance in those areas.[19] Recovered wool was not used in the worsted industry.

Raw material inputs to the wool textile industry included virgin wool, skin wool, recovered wool, cotton, and some other fibres, including hairs, in small quantities. Assessment of new wool input has to take into account changing clean wool yields over time from both home supplies and imports. Best estimates of clean new wool consumed by the United Kingdom wool textile industry are shown in Table 5.[20] Satisfactory estimates of cotton consumption are not available. The proportion of clean new wool (including skin wool) destined for the woollen and worsted branches can only be roughly estimated for occasional years from various contemporary accounts, including the 1907 and 1912 Censuses of Production.[21] Suggested proportions for occasional dates are shown in Table 6. For estimates of the volume of recovered wool consumed by woollen cloth manufacturers we are dependent upon the figures produced by Frank Hooper, secretary of the Bradford Chamber of Commerce and the leading statistician of the wool textile industry at the time.[22] The derivation of his figures is uncertain but they are probably based on rag imports and his own estimates for home rag supply, both adjusted for recovered wool yield, with an allowance for exports. Hooper's figures do accord with a few other contemporary

TABLE 5

WOOL CONSUMPTION
BY THE UNITED KINGDOM WOOL TEXTILE INDUSTRY, 1870–1914

Annual Averages	Clean new wool million lbs.	Recovered wool million lbs.	Recovered wool % of all wool
1870–74	259	89	26
1875–79	261	104	28
1880–84	260	123	32
1885–89	275	101	27
1890–94	316	118	27
1895–99	323	132	29
1900–04	305	145	32
1905–09	340	193	36
1910–14	380	206	35

Source: D.T. Jenkins and K.G. Ponting, *The British Wool Textile Industry, 1770–1914* (1982), p.204.

estimates and they do not appear to have been subject to contemporary criticism. They were widely used in official reports.

The extent of, and trends in, use of recovered wool are shown in Table 5, which also indicates shoddy and mungo retained as a proportion of all wool used by the wool textile industry. By early this century over one-third of wool used annually in the United Kingdom wool textile industry was recovered wool. As Table 6 indicates, the 1907 Census of Production calculated that 44 per cent of clean new wool consumed by the British wool textile industry in that year was employed by the woollen branch. If that 44 per cent figure is applied to the average new wool consumption figure of 340 million lbs. for the wool textile industry as a whole, as shown in Table 5, then the woollen branch was using around 150 million lbs. of new wool per annum at that time. Average recovered wool consumption in the woollen industry in the same period was 193 million lbs. The 1912 Census of Production indicates that the woollen branch employed 32 per cent of the clean new wool consumed in the wool textile industry. Using the figure of 380 million lbs., in Table 5, for total clean wool consumption in wool textiles at the time, it follows that the woollen branch was consuming 122 million lbs. of new wool, compared with 206 million lbs. of recovered wool. The data on which these calculations are based cannot be assumed to be very accurate but the implications seem undeniable. In the United Kingdom woollen industry much more recovered wool than clean new wool was being used in manufacturing by early this century.

In 1879 a report in the trade journal *Textile Manufacture* estimated that 62 per cent of new wool consumed in the wool textile industry was used in the woollen branch. This would have amounted to about 162 million lbs. of new wool compared with about 104 million lbs. of recovered wool. (see Table 5) Thus these estimates suggest that

TABLE 6

PROPORTIONS OF CLEAN NEW WOOL USED BY
UNITED KINGDOM WOOLLEN AND WORSTED INDUSTRIES

	Woollen section %	Worsted section %
1864	54	46
1879	62	38
1907	44	56
1912	32	68

Source: 1864: *Second Report of the Pollution of Rivers Commission* (P.P., 1867, XXIII), pp.248–9; 1879: *Textile Manufacture*, 15 Dec. 1879; 1907 and 1912: *Final Report of the Third Census of Production of the United Kingdom*, 1924, Vol.I, p.77.

around 1879 shoddy and mungo formed about 39 per cent of the wool used by the woollen branch. The figures above suggest that the percentages for 1907 and 1912 were 56 and 63 per cent respectively. Thus the use of recovered wool in woollen manufacure rose very significantly over the period with which we are concerned. Allowing for the county's share of national weaving capacity, estimated above at 70 per cent, Yorkshire consumed about 105 million and 85 million lbs. of clean wool in the two periods respectively. This, of course, does not attempt to take into account differences between regions in the balance between yarn and cloth production. Assuming no more than 10 per cent of recovered wool was used outside Yorkshire, the implication is that in 1907 the Yorkshire woollen industry was consuming about 174 million lbs. of recovered wool; and 185 million lbs. five years later. Thus the use of recovered wool exceeded that of virgin wool in the Yorkshire woollen trade by 1.7 and 2.2 times in the two periods. Or put another way the proportion of recovered wool in Yorkshire woollen cloth averaged almost two-thirds in the decade before the First World War.

Lack of adequate data precludes similar estimates for earlier periods. The fluctuating proportions of wool going to the woollen and worsted branches are unknown, but there is every reason to believe that West Yorkshire had become progressively more and more dependent on recovered wool. Hooper's figures suggest that the rate of growth of its use fell in the 1880s but rose again thereafter and particularly rapidly in the 10 years before the First World War. Relative dependency on recovered wool may have been reduced during periods of falling wool prices and increased as wool prices rose. This would seem to be explicable through falling new wool prices reducing purchase prices of rags, which appear to have had a high price elasticity of supply. Rag supplies were highly sensitive to prevailing or expected wool price levels. Relative dependency also resulted from manufacturers adjusting their blends in relation to relative prices of new and recovered wool. With falling new wool prices there was less incentive to sacrifice yarn quality by using recovered wool. With rising new wool prices, and increased rag supply, there was a greater incentive to increase recovered wool in blends to maintain yarn and cloth prices. This is examined in detail by Malin, who has shown that differential price movements unfavourable to recovered wool appear to have exerted less influence on its consumption, with the exception of the mid-1880s, than might have been expected. There were perhaps other factors besides low wool prices which help explain the lower rate of consumption of recovered wool, including fashion movement away from the heavy 'staples' of Batley and Dewsbury and embargoes on rag imports in 1884/85 and 1892/93 through fear of disease.[23] On the other hand sudden exogenous influxes of rags, as from France after 1860 and from the USA in 1909, exerted strong downward influences on recovered wool prices, stimulating the use of shoddy and mungo.[24]

II

The term 'shoddy' has acquired a derogatory meaning, but we should be wary of assuming that the incorporation of recovered wool in yarn and cloth inevitably meant inferior quality. The West Yorkshire woollen trade attempted to blend new and recovered wool in quantities appropriate to the nature and use of the product. Many purchasers, including governments, official bodies and ready-made clothing firms for example, imposed firm quality specifications which Yorkshire manufacturers aimed to meet through judicious blending. They became renowned for their skill in regulating and adapting blends and they gradually extended the use of recovered wool into a wider range of products. Shoddy was not necessarily an adulterant. Better qualities of shoddy could be preferable to some of the lower grades of new wool. Moreover, shoddy was not just a substitute raw material for new wool. Its use gave particular qualities to cloth – notably a fullness of surface finish. Thus shoddy was, at times, used as a supplementary or complementary raw material. The range of Yorkshire goods that incorporated shoddy was considerable. It included civil and military uniform cloth; blankets; flannels; travel rugs; shawls; some furnishing and carriage fabrics; men's woollen suitings, trouserings and overcoatings; and low and medium quality tweeds. Indeed, it is probable that rag wool was incorporated in the vast majority of Yorkshire woollen cloth by early this century, including in quite fine cloth. Certainly, at times, products were over-adulterated and suffered consequent deterioration of reputation, but competitors recognised the success that was attained through judging a fine balance between price and quality. Finish was particularly important, because it was also recognised that a cloth would sell if it could be made to look equal to a more expensive article for a time, even if its relative flimsiness or weakness was realised.[25]

Individual manufacturers understood that blending different qualities of shoddy and mungo, generally with new wool, was critical to their ability to compete on the basis of price, whilst skill in blending was crucial to the maintenance of quality, range and profitability. Indeed, so great was their importance, that manufacturers often kept details of their blends in code. That success, in an increasingly competitive world, was dependent on the judicious use of blends of recovered and new wool was not lost on North American manufacturers. It was stressed by one technical writer in 1911 and by a Canadian manufacturer who wrote in 1889:

> In these days of keen competition, manufacturers devise all sorts of mixtures of stock in order to produce cheap goods, and by skilful manipulation in the blending of the different fibres, endeavor to make them appear of much finer quality than they really are.[26]

An American manufacturer likewise recognised the importance of blending skills:

> in some parts of Europe, especially in Yorkshire, manufacturers are enabled to get more poor material into yarn than in any other part of the world, for the simple reason that they are highly skilled in the art of combining.[27]

What, then, were the price and cost advantages of using recovered wool? The most obvious was that, although price relativities between new and recovered wool varied over time, recovered wool was always significantly cheaper. The extent of the difference was generally substantial. The different nature and quality of the raw materials preclude exact comparisons, but, by way of example, in 1912 a representative price for shoddy was about 6d. per lb., and for mungo 4d. per lb. In the autumn of the same year prices of well washed English wool ranged from 7½d. to 15d. per lb.; scoured Australian fleece wool from 13d. to 24d. per lb.; and River Plate wool from South America from 9d. to 12d. per lb.[28] The last perhaps provides the best comparison as it was the raw material that continental woollen manufacturers had moved increasingly towards. Very roughly, raw material costs accounted for from one-third to over half of the total cost of producing woollen cloth with new wool.[29] The figure obviously varied with the type of cloth. If one assumes an average of 40 per cent, which may be conservative, the implication for a manufacturer of blending one-third new wool and two-thirds recovered wool was perhaps of the order of one-third savings in raw material input costs and consequently as much as a 13 per cent saving on total costs. Thus as long as the quality of the Yorkshire product was acceptable to the purchaser at the lower price that could be charged, it inevitably had a competitive advantage as a result.

The second cost advantage in the use of recovered wool was as a buffer against rises in other raw material costs. There appears to have been quite high short term elasticity of supply of recovered wool. This gave manufacturers the ability to make rapid changes in the proportion of raw material in blends in response to small changes in relative price levels of fibres. Malin has traced this response in the blend books of the firm of J.T. & J. Taylor of Batley.[30] In times of rising new wool prices, judicious substitution in blends of even small quantities of cheaper recovered wool allowed the Yorkshire industry to stabilise costs and thus prices. As long as the customer was prepared slightly to sacrifice quality in order to limit price increases, the manufacturers could maintain, and even gain, a competitive edge. This was recognised by one of Benjamin Gott's travellers as wool prices rose in the early 1860s. He forcefully pointed out:

> You must make up your mind to do as the first people in the trade do; put a certain quantity of shoddy in your black cloths up to 11/- a yard, but not so much as will interfere materially with the strength. This you must do or you cannot compete with good houses . . . I

> know the use of shoddy is very objectionable to you, but if the spirit of competition drives you to it, you must do it or be driven out of the market . . . I see no other course.[31]

In the period of rapidly rising wool prices in the two decades before the First World War, average cloth export values were stabilised better than the use of new wool would otherwise have permitted. In 1909 the large influx of rags and mungo from the United States allowed Yorkshire manufacturers to maintain prices and profit margins at a time of rapidly rising new wool costs.[32]

In addition to the price advantage of recovered wool, the 'colour value' provided an important cost-saving element at the dyeing, and subsequent drying stage of production. Dyeing of wool, yarn or cloth was a costly process in the wool textile industry in terms of capital, materials, labour and time. Quality of dyeing mattered for the final product. The use of shoddy and mungo could enable manufacturers to avoid having to dye their product. Rags were sorted into hundreds of different qualities and colours by rag dealers. Manufacturers, as a result, could thus often buy rags and produce shoddy in the colour they required. If blended with new wool, only that wool might need to be dyed. Colour of yarn could be determined by an admixture of pre-dyed wool and careful shoddy colour selection. This advantage may have been particularly significant in the development of the Yorkshire low to medium quality fancy tweed trade.[33]

The use of shoddy may also have increased some costs. The costs of blending shoddy and new wool were probably a little more than those of blending different types of new wool. The nature of the recovered wool fibre may have restricted spinning speeds compared with the use of new wool. Manufacturers had to balance speed against risk of breakage to optimise output in both spinning and weaving. One technical writer in 1884 warned of the diseconomies of spinning beyond the capabilities of a blend.[34] A bad spin would affect weaving properties but technical innovations in weaving, particularly the introduction of the Dobcross loom in the 1880s, improved power-loom weaving of tender yarns. Detailed manufacturing costs are not available to carry out a check, but contemporary discussion of the use of shoddy does not indicate that additional processing costs were great. Clearly they did not cancel out the lower price advantage of reclaimed wool.

Because of the difference in quality and type of cloth produced with new wool compared with recovered wool and a lack of detailed breakdowns of the various stages of manufacturing costs, the extent of typical cost savings overall is difficult to gauge and was obviously not constant. But it may not be unreasonable to surmise that savings of between 10 and 15 per cent were obtainable through producing roughly comparable cloth from mainly recovered wool rather than new wool. The advantages of lower costs of production on both price and profit, and competitiveness, are thus probable in an absolute sense. But other implications seem possible as well. Lower production costs may have enabled Yorkshire manufacturers to creep under tariff barriers and to compete with the protected home products of their traditional markets better than the competing industries of France and Germany. There is some evidence for this in the United States market where lower costs and prices, enabled by shoddy, allowed some cloths to remain competitive with home products in spite of specific and *ad valorem* tariffs. The difficulty customs officers had in determining fibre content assisted. For example in 1903 an American discussing the use of shoddy wrote:

> The great success of the English and German manufacturers have been that they knew how to work shoddy better than we did, and even with the tariffs their good had the call, for it was impossible for any customs official or expert to determine what is old and what is new wool in a fabric. But times have changed, and the one benefit the American manufacturer gained from the hard times of 1893 was how to work shoddy. He had to do it to survive.[35]

Moreover, the relatively low woollen cloth prices may have encouraged some substitution of woollen cloth for cotton and worsted cloth in various markets. The advantages to Yorkshire woollen manufacturers of the use of recovered wool did not go unnoticed at the time by competing countries. One example must suffice. In 1903, the American journal *Textile World Record* observed:

> Yorkshire knowledge and skill in making woollen, worsted and shoddy goods is one of the factors which makes it impossible for American manufacturers . . . to compete with the Yorkshire product on even terms. Yorkshire woollen workers are more skilfull than we are, especially in the art of converting waste woollen products, called shoddy, into useful and serviceable fabrics.[36]

III

If recovered wool was so useful to the British woollen industry, why did the French and German industries not make more use of it? In France rags were collected on a widespread basis. The Anglo-French Treaty of Commerce released a large supply of exceptional quality rags, previously protected for the French paper industry. One Dewsbury merchant described how he travelled extensively in France after 1860 visiting rag merchants in cities and larger towns, teaching them how to prepare and sort for the Dewsbury market.[37] By the early 1870s when perhaps two-thirds of the rags required were imported, French supplies of rags and shoddy dominated all imports to Yorkshire. Estimates are not available for the amount of recovered wool used in the French woollen industry, but there is no reason to believe that recovered wool provided more than a tiny proportion of raw material consumption for the industry. The major areas of woollen manufacture in Normandy and northern France appear to have largely shunned recovered wool. Smaller centres however made some use of it. In particular, the town of Vienne, south of Lyons in the Rhône valley, became the major French centre for rag grinding and recovered wool manufacture. The town specialised in low woollens. Although Vienne was a small and isolated centre for woollen manufacture with only 60,000 woollen spindles out of a French total of about 700,000 in 1910,[38] its business survived better than that of any other French woollen town in the years before the First World War.[39] There is some evidence that a few other individual towns, notably Sedan, did manufacture recovered wool, but its use was not widespread.[40]

Recovered wool was more widely used, however, in the German woollen industry, where by 1907 shoddy making mills had an output of about 65 million lbs. Germany, like France, had a substantial rag collecting industry.[41] It exported large quantities to Britain and both exported and imported shoddy. Samuel Jubb noted the quality of German mungo supply as 'excellent, both as regards colour, condition, evenness of fibre, and general character', and commented that it was superior to the run of qualities got up in England.[42] Germany dominated Yorkshire mungo supply until at least the late 1870s. Assuming, perhaps quite falsely, that German home output of shoddy in 1907 approximated to consumption and relating the figure to spindleage of 1,956,342 in the woollen trade, the German woollen industry may have been spinning about 33 lbs. of shoddy per spindle on average, compared with a figure for the British woollen industry of around 68 lbs. per spindle in the same year, and perhaps nearer 100 lbs. per spindle for the Yorkshire woollen industry.

The British trade commented occasionally on competition or potential competition from European cloth containing recovered wool. In periods of high rag prices continental demand was alluded to. A trade journal, in the 1880s, wrote of the growing demand from German manufacturers for rags. There was an occasional outcry about imports to Britain of cheap shoddy goods from Germany, some of which had been made up from shoddy yarns bought in the West Riding.[43] The Germans clearly did attempt to compete through recovered wool blending in many neutral markets, but British complaints of competition in cheap woollen fabrics were few and far between. The expected German onslaught never really arrived.

The reasons for the lower use of recovered wool on the continent were a combination of recovered wool supply disadvantages, technical and labour skill contrasts, and alternative strategies in raw material use and in product. Although elaborate rag collection organisations existed on the continent, each country, each area, provided particular types and qualities of rags as a result of their local clothing qualities and fashions. No one country had a sufficient range of supply to cater for woollen manufacturers' needs. Over many decades Yorkshire rag dealers had developed widespread contacts and a complex network of supply from many different parts of the world. The volume and variety of the rags they handled was unrivalled on the continent. The well evolved Yorkshire rag auction system encouraged good prices and attracted continental rag suppliers. Although Yorkshire sorters, dealers and auction houses were accessible to continental manufacturers and shoddy was exported, Yorkshire manufacturers would seem to have had advantages in more ready access to supply for immediate particular needs. They could select, on the spot, as requirements dictated, from a large variety of qualities and colour. By the 1880s there was no quick and easy means by which continental producers could create such a substantial supply system for a wide range of types and qualities of recovered wool within their own areas; and the existing level of their needs would not have been adequate to stimulate such a supply system rapidly into operation when rag demand in Yorkshire remained firm.

It may be more debatable whether labour skills were so significant in Yorkshire's command over the use of recovered wool. The importance of blending skills has previously been referred to. There was a suggestion that West Riding shoddy manufacturers were able to pull rags much cheaper than elsewhere.[44] Much was made at the time of Yorkshire's ability 'to spin anything with two ends'. Those skills undoubtedly existed. But it is not obvious that Continental manufacturers did not have, or could not have acquired, the skills. They were accustomed, in many districts, to spinning short stapled new wool. They had long needed to blend various types and qualities of new wool. The use of recovered wool in various continental centres shows that skills could be developed.

However, just as the British worsted industry found its spinning machinery inappropriate for adjusting to new products, so much continental machinery was not ideally suited or adaptable to recovered wool carding and spinning. Technical differences in carding were recognised by one experienced Yorkshire manufacturer as being of particular significance:

> With all their skill, the Belgians have never excelled in the use of shoddy. Their system of carding, although so well suited to the strong and hard fibres of Buenos Ayres wool, does not compete successfully against the British system of treating shoddy or the softer wool from the colonies. The writer has studied the Belgian system at Verviers, as well as the English methods in his native county of Yorkshire, and thinks the latter are far superior.[45]

The comment would have applied equally to much French machinery, and it gives a hint to an alternative strategy employed by continental woollen manufacturers. They recognised the need to reduce raw material costs. Means were sought to do so through alternative cheaper new wool supplies. France, through the town of Mazamet, gained a substantial hold over world skin wool supplies, importing huge quantities of skins from the southern hemisphere and stripping wool from them for use in both woollen and worsted manufacture.[46] It supplied a new, cheaper raw material to the industry but not to the equivalent cost reduction advantages as recovered wool. Of more importance was the development of the use of South American wools. Generally cheaper in price than other new wools, they were appropriate for French production methods and machinery. They required more treatment, particularly carbonising, to remove extraneous vegetable matter, and strong carding. It has been argued that, in the short term they were the salvation of the Elbeuf woollen trade.[47]

South American wools certainly made a substantial impact on the European wool market and lowered average wool prices. They were used primarily on the continent, imported through Antwerp, Le Havre and Bordeaux. Of the small quantity sent to Britain some was exported. British manufacturers shunned their use and have been criticised for doing so. But clean yield from South American wools was low – as little as 30 per cent – and much effort was necessary in processing. British carding machinery was less suited to it and there was little incentive to change that machinery when it was well engaged in processing recovered wool. British woollen manufacturers' well recorded doubts about the wools may not, however, have been entirely rational. They were heavily used in yarn imported into Britain for the Scottish and hosiery trades.[48]

Perhaps of greater importance as an explanation of the slow continental use of recovered wool was a hesitancy of decision about how to respond to the strength of British competition and the nature of the market. That decision was often between maintaining, or increasing, the quality of product and attempting to compete on the basis of quality or diluting quality to reduce cost and price to compete in the larger mass market the British product was supplying. In the French industry there appears to have been indecision about what to do. The stagnation of its home market removed a buoyant base for commercial activity. Although the upper echelons of foreign markets for better quality textiles remained strong, the French woollen industry's share of those markets was challenged by other fabrics, particularly all-wool worsteds and silks, and by the impoving quality of home production in some major markets, notably the United States. The alternative strategies the French woollen manufacturers might have pursued were either to maintain or enhance quality or to dilute it very substantially to compete with Britain. What they appear to have done was to pursue a course which diluted the quality of their product by various cost reductions, and in some instances by increased mechanisation inappropriate to maintaining the quality of their woollen cloth.[49] But they failed to undertake the measures, such as using recovered wool, that might have reduced their costs sufficiently to compete with the British product on price. The result was a quite unsatisfactory compromise. French products became even more susceptible to competition and to the constraints of foreign tariffs. Although French manufacturers must surely have recognised the advantages to the British industry of incorporating recovered wool in its products, there is no strong evidence to suggest that French manufacturers seriously considered attempting to use more recovered wool, yet many of their medium quality products could have incorporated shoddy in wool blends with advantageous cost and price consequences.

The competitive situation facing the German woollen industry was rather different. It did not so much have traditional old markets to defend. Instead its interests were in supplying a rapidly growing home market and in creating products that could be successfully sold abroad. Contemporary stories of how the German industry copied, but undercut on price and quality, the products of its competitors, were much reported in the British and French trade press.[50] Arguably this tactic hurt the French industry more than the British. Dilution of quality of French woollens made them more susceptible to German competition. Germany deliberately pursued a strategy of improving the quality and diversity of its products to the neglect of the production of cheaper cloths and thus remained less competitive in the market for the latter.

IV

Yorkshire's, and thus Britain's, absolute and relative success in woollen manufacture is not just explicable in terms of its lower raw material costs. There were other factors which assisted its commercial success and share of world markets. The county dominated the supply of uniform and other military cloth to combatants in most major military conflicts around the world. Shoddy and mungo were allowed in British army cloths from 1871. Their use had been permitted earlier in navy cloths. Generally governments specified the tolerances in quality they would accept. The frequency and intensity of conflict which characterised the period to around 1905 affected the Yorkshire heavy woollen district, both through a fairly sustained high level of demand for military cloth and through the sometimes contracyclical nature of that demand. Military orders contributed to the stability and profitability of the industry. Productive capacity was kept more fully employed and military cloth often provided better profit margins than the home market. Although it is impossible to assess what proportion of Yorkshire output was for military orders, the county undoubtedly gained the major share of woollen cloth orders arising out of military conflicts in the post-1880 period. For example it obtained the bulk of military orders for the Russo-Japanese war of 1905. The success may be explicable through the lower production costs recovered wool permitted, but the size of the Yorkshire woollen industry also enabled it to respond rapidly to sudden large military orders. Larger firms could bid for major military orders in the knowledge that there was adequate capacity locally to which to sub-contract work to meet often tight deadlines.[51]

The nature of the British home market also provided it with some ongoing stability. Its general response to fashion movements seems to have been better than that of the worsted industry and of the French woollen industry. Yorkshire manufacturers worked hard and successfully to create, respond to and copy fashion movements. Perhaps they were fortunate in that in some fashion trends were moving in their direction, but the view which emerges from contemporary reports and subsequent analysis is of an industry on the one hand reaping the benefits of fairly standard products produced very cheaply and for which there was large and relatively inelastic demand, yet on the other hand quite able to respond rapidly to sudden surges in demand and changes in fashion.[52] The home market was substantial. The bulk of low woollen production for it was for male demand for working and outerwear for which there was a more regular rate of replacement. Long production runs allowed smaller unit profits. And as market resistance, particularly from ready-made clothiers, was felt to price increases occasioned by shortfalls in world wool supply after 1902, so recovered wool allowed costs to be kept down. But availability of a wide range of recovered wool and the structure of the industry in terms of a relatively large number of small firms, plus perhaps ease of entry for small specialist producers, enabled rapid reaction to fashion changes. This surely implies quite efficient entrepreneurial responsiveness. Willingness to adapt machinery and to introduce new fabrics supports this view.

Success in the military market and responsiveness to other market changes were related to the Yorkshire industry's willingness and ability to use recovered wool. It seems clear that, in manufacturing a substitute for wool that possessed both a price advantage and a cost reducing facility, the rag and shoddy industry provided a source of raw material that was consistently cheaper than, and relatively independent of, the supply of virgin wool. The growth in consumption of recovered wool, and the West Riding trade's increasing reliance on it, does appear to have been the main response of the British industry to intense foreign competition. The use of recovered wool was a major competitive tool within the Yorkshire industry, and the Yorkshire woollen sector seems to have been more prepared, and perhaps able, to exploit substantially the cost-reducing properties of shoddy and mungo. As a result it was able, in the years before the First World War, to increase its share of a constrained world market to the disadvantage of its major competitors, Germany and France. Manufacturers' ability to make rapid changes in the proportion of raw material in blends in response to small changes in relative price levels of fibres enabled the Yorkshire industry to stabilise prices better than manufacturers elsewhere. That ability rested primarily on the highly evolved supply system, and supply elasticity, of recovered wool and on the skills which had been developed to process it.

Perhaps a final indication of how recovered wool could affect the competitiveness of European woollen industries becomes apparent in the twentieth century. Prato, in Italy, successfully established a woollen industry based on recovered wool. In due course it became the most dynamic centre for woollen cloth production in Europe, expanding its output as other areas in Europe contracted. It gradually took over Yorkshire supremacy in the quality and variety of goods that could be made from recovered wool blends. It had other advantages, labour costs in particular, but the main suggested reason for its twentieth-century success would appear to be similar to the reason for the success of the Yorkshire woollen industry in the late nineteenth century.[53] In more recent times Yorkshire has forsaken shoddy and it has been recognised that a gap in the industry has resulted:

> The rationalisation of the early 1980s was beneficial in that it eradicated surplus capacity, but it also left gaps in the industry's structure. The shoddy trade . . . which once flourished in Yorkshire has disappeared, thereby removing a cheap source of raw materials for the wool industry. The Italian industry by contrast benefits from the thriving shoddy trade.[54]

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NOTES

1. For this optimistic view see, for example, E.M. Sigsworth and J.M. Blackman, 'The Woollen and Worsted Industries' in D.H. Aldcroft (ed.), *The Development of British Industry and Foreign Competition*, 1875–1914 (1968), pp.140–1; S.B. Saul, *Studies in British Overseas Trade*, 1870–1914 (1960), p.33; D.T. Jenkins and K.G. Ponting, *The British Wool Textile Industry*, 1770–1914 (1982), Chs.9, 10; G.H. Wood, 'Tests of Progress applied to the Woollen Trade', *Huddersfield Textile Society Journal* (1909), pp.56–61.
2. There were regular gloomy forecasts about potential German supremacy in wool textiles in the British trade press. See for example the retrospective comment in the *Textile Manufacturer*, 15 Dec 1905. Note also the comments in E.E. Williams, *Made in Germany* (1896).
3. See E.M. Sigsworth, *Black Dyke Mills: a History. With introductory chapters on the development of the worsted industry in the nineteenth century* (Liverpool, 1958), Ch.III; Jenkins and Ponting, *British Wool*, Ch.9.
4. See Table 4 and the discussion in Jenkins and Ponting, *British Wool*, Ch.9.
5. A.H. Cole, *The American Wool Manufacture* (Cambridge, MA, 1926), Vol.II, pp.70–2.
6. Shoddy is the fibre obtained from pulling softer, generally unmilled cloth, although the term is frequently applied to all recovered wool. Mungo is the fibre obtained from harder, generally felted or milled cloth, including tailors' clippings. Extract is the lowest type of waste that can be reused. It consists of very short fibres. For details of processing methods see N.C. Gee, *Shoddy and Mungo Manufacture* (Manchester, 1950).
7. Width increases may have been as much as 50 per cent. See C. Ogden and P.T. Macaulay, *Gain or Loss? Under Preference, Protection or Retaliation. An Inquiry on the Woollen and Worsted Trades* (Bradford, 1905), p.58; J.H. Clapham, *The Woollen and Worsted Industries*, (1907), pp.274–5; A.L. Bowley, 'Notes on the Statistics of the Woollen Industries', *Economic Journal*, Vol.15, 1905, p.588.
8. See Jenkins and Ponting, *British Wool*, pp.256–9.
9. A.H. Cole, *The American Wool Manufacture, Vol.II*, p.47; Jenkins and Ponting, *British Wool*, pp.251–2; Report of the Tariff Commission, Vol.II, *The Textile Trades* (1905), Para.1547, Table 32.
10. *Third Report of Mr T. Worthington on the Condition and Prospects of British Trade in Certain South American Countries* (P.P., 1899 (C.9078) XCVI), p.489; Jenkins and Ponting, *British Wool* p.254.

11. D.T. Jenkins, 'The Response of European Wool Textile Manufacturers to the Opening of the Japanese Market', *Textile History*, Vol.19 No.2 (1988), pp.255–78.
12. Sigsworth and Blackman, 'Woollen and Worsted Industries', p.139.
13. J. Levain, J. Rougerie et A. Straus, 'Contribution à l'étude des mouvements de "longue durée": la croissance de l'industrie lainière en France au XIXe siècle: ses allures et ses déterminants', *U.E.R. d'Histoire*, Pt.I, Bulletin No.12 (Paris, 1983); Pt.II, Bulletin No.13 (Paris, 1984). About 25 per cent of French wool textile production was exported in the 1890s and less than 20 per cent a decade later.
14. See Committee on Industry and Trade, *Survey of Textile Industries* (1928), pp. 247–51.
15. *Factory Returns* (P.P., 1867–8 (453) LXIV; 1904 (293) LXXXVII).
16. D.M. Hunter, *The West of England Woollen Industry under Protection and Free Trade* (1910); K.G. Ponting, *A History of the West of England Cloth Industry* (1957); Jenkins and Ponting, *British Wool*.
17. C. Gulvin, *The Tweedmakers: a History of the Scottish Fancy Woollen Industry, 1600–1914* (Newton Abbot, 1973), pp.146, 238, 290. *The Huddersfield Examiner* (30 Dec. 1882) and *The Dewsbury Reporter* (31 Dec. 1904) both reported that Yorkshire goods were being merchanted as Scottish.
18. *Yorkshire Observer Trade Review*, 7 Jan. 1929, p.24. See also Clapham, *Woollen and Worsted*, Ch.7; Wood, 'Tests of Progress', pp.56–60.
19. J.C. Malin, *The West Riding Recovered Wool Industry*, 1813–1939 (D. Phil. thesis, University of York, 1979), p.440; *Wool Record*, 2 Feb. 1920.
20. For derivation of the figures see Jenkins and Ponting, *British Wool*, pp.198–206.
21. *Final Report of the First Census of Production of the United Kingdom, 1907* (PP, 1909 (Cd 4896) CII); *Final Report of the Third Census of Production of the United Kingdom, 1924*, Vol.I, p.78.
22. F. Hooper, *Statistics relating to the Woollen and Worsted Trades of the United Kingdom, 1906* (Bradford, 1907) and subsequent editions.
23. Malin, thesis, pp.126, 454; *Huddersfield Examiner*, 29 Dec. 1883.
24. *Dewsbury Reporter*, 30 Dec. 1911; *Wool Record*, 12 Dec. 1912; Sigsworth and Blackman, 'Woollen and Worsted', p.155.
25. *Textile Manufacturer*, 6 Oct. 1890, p.493; E.M. Sigsworth, 'The Woollen and Worsted Industries', in R. Church (ed.), *The Dynamics of Victorian Business* (1980), p.187.
26. *Textile Manufacturer*, 15 April 1889; W.S. Murphy, *The Textile Industries: a Practical Guide to Fibres, Yarns and Fabrics in Every Branch of Textile Manufacture* (1911), Vol.I, p.148.
27. *Textile Manufacturer*, 6 Oct. 1890.
28. *The Wool Record*, 12 Dec. 1912.
29. There are many contemporary estimates of new wool cost as a proportion of the total cost of producing a piece of woollen or worsted cloth. They vary between 35 and over 50 per cent. See for example *Report of the Tariff Commission*. Vol.2. *The Textile Trades. Pt.2. Evidence on the Woollen Industry* (1905), Para.1549, Table 34; Census of Production, 1907, p.97; Levain, Rougerie et Straus, 'Contribution', pp.106–7; P. Pouchain, 'L'industrialisation de la région lilloise, 1800–60', University of Lille III, thesis, 1980, p.877.
30. Malin, thesis, pp.431–3, 458–61, 485 et seq.
31. H. Heaton, 'Benjamin Gott and the Industrial Revolution in Yorkshire, *Economic History Review*, Vol.III (1931), p.66.
32. See Malin, thesis, p.487 for a detailed discussion.
33. R. Beaumont, *Woollen and Worsted Cloth Manufacture* (1889), pp.24–7; Malin, thesis, p.473; G.C. Hirst, *History of C.J. Hirst & Sons Ltd.* (Huddersfield, 1942), p.57.
34. W.S.B. McLaren, *Spinning Woollen and Worsted* (1884), p.186.
35. Channing Smith, 'Shoddy: Its Uses and Abuses', *Special Annual Report of the Alumni Association of the Philadelphia Textile School* (1903), p.38; cited in P. Scranton, *Figured Tapestry* (Cambridge, 1989). I am grateful to Dr Mary Rose for the reference.

36. *Textile Journal*, Vol.III No.1, 7 Dec. 1903, p.288.
37. F.W. Reuss, 'Old French Rag Merchants and Exporters' *Waste Trades World*, Vol.28 June 1913, p.8.
38. C. Chatain, *L'Industrie Drapière Viennoise: son état passé et présent* (Vienne, 1925); *Wool Year Book*, 1913, p.81; Levain, Rougerie et Straus, 'Contribution', Vol.I, p.70.
39. Levain, Rougerie et Straus, 'Contribution', Vol.I, p.70.
40. Ibid., p.71.
41. *Wool Year Book* (1913), p.79.
42. S. Jubb, *The History of the Shoddy Trade: Its Rise, Progress and Present Position* (1860), pp.31–2.
43. *Textile Manufacturer*, 15 Aug. 1883.
44. *Waste Trade World*, 12 April 1913.
45. *Wool Record*, 18 April 1912.
46. See D.T. Jenkins, 'Mazamet and the Skin Wool Trade, 1850–1913', *Textile History*, Vol.15 No.2 (1984), pp.171–90; R. Brenac, 'Les industries de Mazamet', *Revue Géographique des Pyrénées et du Sud Ouest* (1932); R. Cazals, Les Révolutions Industrielles à Mazamet, 1750–1900 (Paris, 1983).
47. Levain, Rougerie et Straus, 'Contribution', Vol.I, p.82. See also *Textile Manufacturer*, 15 Feb. 1879; *Wool Record*, 18 April 1912; Huddersfield Chamber of Commerce, *Paris Exhibition 1878: Artisans' Reports* (Huddersfield, 1878), p.5.
48. Levain, Rougerie et Straus, 'Contribution', Vol.I, p.67; Jenkins and Ponting, *British Wool*, p.201.
49. Levain, Rougerie and Straus, 'Contribution', Vol.I, p.83
50. For example *Textile Manufacturer*, 15 Aug. 1889, 15 Dec. 1905; *Huddersfield Examiner*, 28 Dec. 1895.
51. Jenkins, 'Response', p.267; Malin, thesis, pp.463–8. There was also a rising demand for civilian uniform cloth in an age noted for uniforms, for example in the Post Office, railways, the merchant navy and for servants.
52. Heavy woollen manufacturers in Yorkshire made a huge variety of types and designs of cloth. Pattern and blend books suggest product differentiation was a non-price competitive weapon used to great effect. See G. & J. Stubley Ltd., *A Century of Cloth Making* (Leeds, 1950), p.22.
53. See C.N. Nathan, *Italy: a Background to the Textile Industry* (privately printed, c.1967).
54. Alice Rawsthorne in the *Financial Times*, 28 April 1988. Shoddy still has a minor role in the Yorkshire industry.

LANCASHIRE AND THE RISE OF JAPAN, 1910–1937

By ALEX J. ROBERTSON

In the latter half of the eighteenth century, a small island off the north-western shore of Europe began to carve out for itself a position of predominance in the world market for a commodity – cotton textiles – for the production of which it possessed few obvious natural advantages. Yet that offshore island, Britain, not only succeeded in its endeavour, but managed to maintain its supremacy in the face of the development of others arguably better-endowed for the purpose for well over a hundred years. The British position in the world export market for cotton yarn and cloth was not seriously challenged before 1914. But once the challenge materialised, it developed with phenomenal speed. By 1933, Britain was no longer the leading power in the world trade in cotton goods. She had been supplanted by another small offshore island some 12,000 miles to the east, with almost as few natural advantages as herself for the production of cotton textiles: Japan.

This paper is not primarily concerned with analysing the economic advantages which enabled the Japanese to overthrow British supremacy in the cotton trade. Nor does it set out systematically to assess the technical, organisational and other deficiencies of the British cotton industry and trade, which enabled them to be so quickly overtaken by a country which was barely out of its industrial infancy when the First World War broke out. These matters are thoroughly rehearsed elsewhere in this collection by Mass and Lazonick, who – with others such as Lars Sandberg and Maurice Kirby[1] – have amply anatomised the decline of Lancashire, Britain's 'Cotton Kingdom'. The principal concern of this essay lies rather with examining contemporary Lancashire's perceptions of the Japanese threat, and indeed the whole matter of Lancashire's attitudes to Japanese competition, in the hope that it might usefully complement Mass and Lazonick's structural and strategic assessment. After a brief summary of the rise of the Japanese cotton industry and trade between about 1910 and 1937 (when war with China distorted Japan's economic structure), in comparative perspective with Lancashire's development, I intend to trace the growth of Lancashire's awareness of the dangers of Japanese competition. The analysis will then focus on the reactions of Lancashire once the seriousness of the Japanese challenge was recognised, the measures by which the threat was to be combatted, and the factors which hindered the creation of effective responses.

I

Japan's first step towards becoming a cotton manufacturing country in the modern sense was taken in the early 1860s – a little before the Tokugawa Shogunate was overthrown – in the domains of the dissident Satsuma clan, when machinery brought from Lancashire was installed in a mill near Kagoshima. This spinning mill went into production in the year before the Meiji Restoration of 1868, and with the new regime's powerful commitment to economic modernisation the industry's expansion thereafter was quite rapid.[2] For quite some time, the new form of mechanised factory production in cotton spinning developed alongside more traditional forms of technology and organisation among Japan's cotton weavers and finishers. But in the early years of the twentieth century these processes also adopted modern methods, and the Japanese cotton industry came increasingly to be dominated by a relatively small number of large-scale, vertically integrated concerns which had begun even before 1914 to look overseas for markets for their yarn and fabrics.[3] And indeed they had already notched up by 1914 a significant victory in the export trade, having ousted the much larger and more technologically advanced United States cotton industry from the Chinese market for shirtings, sheetings, drills and other coarse goods. China also absorbed a growing quantity of Japanese-made yarn, which offered some competition to Lancashire as well as to Bombay.[4]

But, for all these early successes, Japan's contribution to the world trade in cotton goods on the eve of the First World War remained very modest, particularly when compared with the hegemony of Lancashire. Her piece-goods exports amounted to little more than two per cent of Britain's, for example. The British position at that time seemed utterly unassailable. With 40 per cent of the world's spinning and doubling spindles and one third of its power-looms, Britain's exports of cotton piece goods averaged 6,665 million yards *per annum* in the period 1910–13, or three times the combined exports of the next *six* largest exporters – Italy, France, the USA, Germany, Belgium and Japan.[5] That within 20 years she would be overtaken by Japan, the most recent and weakest of her competitors, would have been dismissed as fantasy in 1914 by any inhabitant of Manchester, Oldham, Blackburn or, for that matter, probably of Osaka.

The First World War benefitted the Japanese cotton trade enormously. As the British Consul in Osaka was later to observe, the war:

> accorded to the industry its great opportunity . . . Not only did Japanese manufacturers find themselves freed from competition in their main market – China – but, owing to the incapacity of England and other regular suppliers . . . they were able to build up a great trade in substitute goods with markets . . . to which they had not previously found entry.[6]

Japan's output of cotton cloth increased by 55 per cent from 1913 to 1918, and her piece-goods exports quadrupled.[7] Meanwhile, Lancashire – with its raw material imports restricted to save shipping space and foreign currency, and its mill-hands fair game for the recruiting sergeant and the Ministry of Munitions – saw its output cut by a third and its exports halved in the same period.[8]

The growth of the Japanese cotton industry was maintained during the brief but frenetic replacement and replenishment boom of 1918–20. Lancashire too staged something of a revival, with a burst of speculative investment based on the assumption that the British cotton trade would regain and even improve upon its predominant pre-war position in the world's cotton export trade. Both Lancashire and Japan experienced nasty setbacks in the slump of 1920–21, however, and from that point onwards the fortunes of the two industries diverged increasingly widely. Lancashire's subsequent history, as is only too well known, was one of initial stagnation and eventual decline on a curve that steepened precipitously after the later slump of 1929–31. Japan, on the other hand, emerged from the slump of 1920–21 into a period of rapid

TABLE 1

PLANT CAPACITY, RAW COTTON CONSUMPTION, PIECE GOODS EXPORTS, UK AND JAPAN 1913–37

	Spindles (million)		Power-looms (thousands)		Raw cotton consumption (million lb.)		Piece goods exports (million linear/square yards)	
Year	UK	Japan	UK	Japan (broad /narrow)	UK	Japan	UK	Japan
1913	55.7	2.4	786	n/a	2178	n/a	7075/ –	211/235
1919	n/a	3.5	791	44*	1526	888	3524/ –	– /1006 (1918)
1921	56.1	4.2	790	55*	1066	852	3038/ –	– /689
1924	56.7	4.9	792	117/124	1369	959	4585/4444	960/960
1929	55.9	6.8	740	171/106	1498	1304	3765/3672	– /1791
1933	49.0	8.5	560	n/a	1177	n/a	2117/2031	– /2087
1937	38.8	12.3	471	363	1431	n/a	2023/1922	– /2644

Sources: 1. All UK figures except piece goods exports (sq. yards) from B.R. Mitchell, *Abstract of British Historical Statistics* (Cambridge, 1971), Ch. VII. Exports (sq. yds.) from British Association, *Britain in Recovery* (1938), pp.458–9.
2. Japanese figures from G.C. Allen, *Short Economic History of Modern Japan* (1980), pp.260–1 (spindles 1933–7; sq. yd. exports 1913–24); W.B. Cunningham, *Report on the Cotton Spinning and Weaving Industry in Japan, 1925–26* (1927), p.31 (raw cotton consumption 1913–24); K. Inahara (ed.), *The Japan Year Book 1933* (Tokyo, 1934), pp.552 (raw cotton consumption 1929), 561 (piece-goods exports, 1929); *A.S. Pearse, *The Cotton Industry of Japan and China* (Manchester 1929), p.23 (power looms 1919–21: Pearse's figures almost certainly represent only looms owned by JCSA members); F. Utley, *Lancashire and the Far East* (1931), pp.83 (spindles 1913–29, power looms 1924–29); 102 (piece-goods exports, linear yds.).

expansion which was relatively unaffected by the events of 1929–31, and which carried her into a comfortable lead in the world export market for cotton textiles before the outbreak of the second Sino-Japanese War in 1937 began to take the steam out of the process. Table 1 above points up the contrasting experiences of the two rival industries by comparing their plant capacities, levels of productive activity and export performances at various key points in the period 1913–37.

Growth on the export side of the Japanese cotton industry was spearheaded by the large, vertically integrated firms which dominated the Japan Cotton Spinners' Association (JCSA) – a cartel originally established in 1889 to regulate competition within the industry; whose members exercised a virtual monopoly over Japanese yarn production and the manufacture of cloth for export in the inter-war period.[9] In 1929, nine such firms – Dai Nippon, Toyo, Kanegafuchi, Fuji Gasu, Nisshin, Osaka Godo, Fukushima, Kishiwada and Kurashiki – accounted for 70 per cent of the spindles, 65 per cent of the looms and 55 per cent of the aggregate paid-up capital of the JCSA's 57 members, and the predominance of this small coterie tended to increase from 1929 to 1937.[10] In fact, the cotton industry and trade of Japan exhibited powerful tendencies in every aspect – raw cotton supply, shipping and merchanting as well as spinning and manufacturing – to oligopoly, if not outright monopoly, in striking contrast to Lancashire's traditional preference for both vertical and horizontal fragmentation.

II

It is easy, with the clarity of hindsight, to perceive the development of the Japanese threat to Lancashire's pre-eminence in the world cotton trade during the four decades leading up to the Second World War. But was the menace of Japan so clearly seen by those who actually had to face it – the millowners, manufacturers, merchants and textile workers of Manchester and the surrounding districts? Certainly, there seems to have been little consciousness in south-east Lancashire *before* 1914 that Japan, even in the fullness of time, might offer a significant challenge to the British position. The Japanese may have caused damage to the American cotton industry's overseas position serious enough to warrant an investigation by the US Department of Commerce of their competitive advantages.[11] But to the extent that the progress of the Japanese cotton industry attracted comment in, for example, the British textile trade press before 1914; the notice it received tended to be more by way of tribute to the Lancashire machine-makers who equipped Japan's spinning mills and weaving sheds than anything else. There were, to be sure, occasional Cassandras uttering warnings about Japan's potential in the distant future to embarrass Lancashire: in June 1911, for instance, the *Manchester Guardian* published a denunciation of Japan as 'the most important and the most dangerous competitor to Lancashire'.[12] But in that Indian summer of Lancashire's expansion and prosperity, there appears to have been little disposition around Manchester to take seriously the threat posed by a rival whose productive capacity and exports represented such a small fraction of their own, and whose technological dependence on Lancashire appeared to be so absolute.[13]

In the years immediately after the First World War, Lancashire's reduced position as an exporter of cotton goods had to be recognised. She remained the market leader, but at a very substantially reduced export volume. Annual average piece-goods exports from Britain between 1919 and 1923 were only some 60 per cent of the yardage for the period 1909–13.[14] The heart of the problem lay in Lancashire's two largest traditional markets, India and China, and more generally in the Far East. One of the county's leading manufacturers pointed out, in an article entitled 'Probing the Wound in Lancashire's Trade',[15] that piece-goods exports to most markets in 1925 were either much the same as in 1913 or had risen above that year's level. The only substantial exception, accounting for virtually the whole of the post-war loss of trade, was the Far East, to which exports had fallen from 4,389 million yards in 1913 to a mere 1,948 million in 1925. The volume of trade thus lost, he proclaimed, was sufficient to keep in full-time employment all the looms of Ashton, Bacup, Bury, Chorley, Clitheroe, Colne, Glossop, Hadfield, Great Harwood, Haslingden, Heywood, Hyde, Oldham, Radcliffe, Rochdale, Stalybridge, Stockport and Wigan. As a little simple arithmetic with the aid of *Worrall's Cotton Trade Directory* reveals, this represented about one-third of England's cotton weaving capacity.

By far the greatest decline was experienced by the trade with India. The quantity of British piece goods shipped to the sub-continent – Britain's biggest market by far – stood in 1925 at less than half of the quantity for 1913. Indeed, during the whole period 1922–29, exports to India only exceeded 50 per cent of their 1913 yardage in 1924 and 1926, and then not by much. Exports to China from 1922 to 1926 hardly reached one-third of their 1913 yardage annually, and what had been Britain's second most important overseas market for cotton textiles in 1913 had sunk to seventh place by 1925.[16]

When it came to explaining how this deplorable state of affairs had come about, there seems to have been a notable reluctance on the part of analysts in Manchester and the surrounding cotton communities to assign to Japan a substantial role in the situation. On the whole, Lancashire preferred to see the explanation of its declining trades with India and China in the early and mid-1920s primarily in terms of domestic conditions within the two markets themselves. And they were undoubtedly correct to do so, as far as the immediate circumstances of the time were concerned. In both countries, the indigenous cotton industries had experienced rapid growth during the war, while Lancashire's share of their trade had perforce been reduced. In both countries, it was noted, post-war economic conditions had aggravated the customary poverty of potential consumers of the coarse, low-priced fabrics which Lancashire traditionally exported to them. India and China were experiencing the first substantial stirrings of organised nationalism, which in both cases manifested itself by way of tariffs to protect the home cotton industries and boycotts directed against goods imported from Britain. In China, there was the added problem of widespread political unrest and instability, amounting in some parts to outright civil war on a large scale which tended to disrupt the market in a big way. And India too, in the aftermath of the massacre of Amritsar, was in a volatile political state. These were the circumstances to which – in the pages of the *Manchester Guardian* and its weekly commercial supplement, or in the reports of the market and commodity committees of Manchester Chamber of Commerce – the loss of trade was chiefly attributed.[17] It was, of course, recognised in 1924 or 1925 that Japanese competition in the Indian and Chinese markets, and indeed elsewhere, had grown.[18] The expansion of Japan's piece-goods exports by a factor of five or six between 1913 and 1925 could not be ignored, even if the balance in Britain's favour remained in 1925 of the order of 4:1. But for all that, there was a strong tendency in cotton trade circles in Lancashire to play down the significance of Japanese competition, and to treat it as merely a temporary irritant.

Typical, perhaps, of Lancashire perceptions of the threat from Japan in the mid-1920s was the response to a warning from an Indian source delivered to Manchester Chamber of Commerce in June 1925.[19] In an address to the Chamber, Sir Maneckji Dadabhoy (a member of the Indian Council of State) expressed in the strongest terms his belief that the main threat to both Bombay and Lancashire came from Japan: 'if no steps are taken in time', he prophesied, 'both in England and in India, I say that Japan is going to become a bigger menace . . . than even Germany was in the past'. But the chairman of the Chamber's India Section, J.H. Rodier, was dismissive. Lancashire, he said, was much obliged for Dadabhoy's warning, but was fully awake to the situation. Japan's power to compete, Rodier reckoned, was due to the purely temporary advantages conferred by the devaluation of the yen in 1924 and by the low price of the previous year's Indian cotton crop. 'Therefore', he concluded magisterially, 'it was unwise to give undue prominence to Japanese competition'. Could it have been that Rodier regarded Dadabhoy's attempt to focus Lancashire's attention on Japan as a device to divert notice from *Indian* competition in the sub-continent, which was then perceived to be much more important?

Members of Manchester Chamber of Commerce must also have derived considerable encouragement the following month from a speech made to them by Sir Edward Crowe, head of the Foreign Division of the Department of Overseas Trade and former Commercial Attaché at the British Embassy in Tokyo.[20] Invited to speak on Japanese competition, Crowe chose to address the subject in terms of Japan's disadvantages *vis-à-vis* Lancashire. He conceded that Japanese labour was cheap, but noted that its cost was rising faster than that of British labour, and that it was 'nothing like so skilful'. Japanese mill construction costs were much higher than British, due to the higher cost of land in Japan and the more extensive areas required to build mills of the conventional Japanese one-storey configuration, which incorporated large dormitory areas for the work force. And Japanese machinery costs were also very high, because of the need to import equipment from the UK. 'When all these factors [are] taken into account', Crowe concluded, '. . . it certainly ought to be possible to cope with Japanese competition'.

Adherents to the view that Japanese competition was both only a secondary contributor to the 'wound in Lancashire's trade' and merely a passing phenomenon may have had some slight misgivings about their beliefs in 1926. There was certainly a flurry of concern, in the pages of the *Monthly Record* of the Manchester Chamber of Commerce for instance, about a growing pressure of competition from Japan in India, China and East Africa. The last was of particular concern, since only a year or so before the Chamber's East Africa Committee had investigated the impact of Japanese piece goods on the East African market, and had reported that 'there is no cause for serious fears about the future'.[21] Yet in January 1926, the same committee was announcing that Japanese goods – 'equal to our Lancashire makes, but frequently . . . sold at much lower prices' – now accounted for 50 per cent of East African imports.[22] In April 1926, Japan was reported to have superseded England as the largest exporter of yarn to India; and in June, the continued rise of Japanese piece-goods exports to India was also noted with concern.[23] But these worries were short-lived, and those who believed like Rodier and Crowe that Lancashire had nothing substantially to fear from Japanese competition in the long run may well have considered themselves vindicated when, in 1927 and 1928, the Japanese cotton industry appeared to have shot its competitive bolt.

During the summer of 1927, the Japanese domestic economy was racked by a severe financial crisis.[24] The yen, which had effectively been devalued by 20 per cent in 1924, had been rising again on the exchanges during 1926, to reach something like its old worth by the end of the year. The effects of this external appreciation of the yen were aggravated by a sharp domestic price deflation, which precipitated a crisis in the Japanese banking system during which several of the country's leading banks were forced to close their doors. Demand in the Japanese home market plummeted, and the effects of this on the cotton industry were exacerbated by the impact of the appreciation of the yen on export sales. So although the finances of the cotton industry and trade were not directly compromised to any significant extent by the bank crash, the level of activity fell and remained depressed through 1927 and into 1928.

Lancashire took note of Japan's embarrassment with some satisfaction. Observing in February 1927 that the rise of the yen on the exchanges had induced 'a somewhat severe slump' in Japanese cotton exports, the *Manchester Chamber of Commerce Monthly Record* reported in May that the JCSA had imposed a stop on 15 per cent of its members' spindles for six months. 'We record this', the *Monthly Record* intoned, 'as being of possible interest to our readers'.[25] As the Japanese cotton industry continued to exhibit serious symptoms of disarray, the conviction seems to have grown in Manchester in late 1927 and early 1928 that the bubble of Japanese competition was being well and truly deflated. It may be significant that, at a great meeting of all sections of the Lancashire cotton interest held in September 1927 in Manchester Town Hall at which the keynote address was given by J.M. Keynes, not one speaker appears to have mentioned Japan explicitly as posing a serious threat to Lancashire's position.[26] And in his Presidential Address to the Chamber of Commerce in February 1928, W.E. Thompson felt able to reassure his audience that:

> there is good reason to believe that the present state of competition is unlikely to last . . . Japan's export trade shows for 1927 a decline which must be attributed to unsatisfactory general conditions in that country.[27]

Confirmation of Thompson's sanguine opinion was provided by the highly respected Consul in Osaka, W.B. Cunningham, who reported in April 1928 that the JCSA had extended its spindles standstill quantitatively from 15 to 20 per cent, and chronologically from May to November 1928. 'Japan', Cunningham advised Manchester, 'is passing through a period of considerable difficulty, and . . . there is much anxiety as to the future'.[28]

III

However much comfort the men of Lancashire might have derived from the apparent decline of Japan as a serious competitive force in 1927 and 1928, they could take little solace from their own position in world trade at that time. The period 1925–28 saw no compensating success story for Lancashire, to balance Japan's setbacks. Indeed, in virtually every significant respect – plant capacity, output or exports[29] – Lancashire remained set on its declining trend. Nor did much in the way of concerted action with a view to reversing the trend seem to be in evidence. There was some fine talk of plans being afoot or action being considered to see off the competition from Lancashire's main traditional markets and restore the county to its rightful place in the world's cotton trade – that place being conceived very much in the terms of 1913 or 1914. A paper presented in January 1927 to the Manchester Statistical Society by G.W. Daniels and John Jewkes[30] chided the leaders of the cotton trade, albeit in fairly gentlemanly terms, for a certain complacency. Eight years or more after the Armistice, it suggested, it might be time to accept that the war had effected a permanent change in the world market, and that Lancashire might never recover her former glory. A year later, the *Manchester Guardian Commercial* made the same point in a more acid tone: 'it was somewhat fatuous to blame the European war for the shrinkage of Lancashire's exports of cotton goods and to expect the mere effluxion of time . . . to restore the trade'.[31] But the *Commercial* went on to claim to discern the birth of a new realism about Lancashire's position, and a growing acceptance of the need for a more systematic approach to an altered market, based on 'self examination, the planning of new projects, the searching for new economies, new markets, new methods'.[32] Had commercial and financial conditions remained as they were in 1927 and 1928, maybe something concrete could have come of this constructive new realism. There certainly appears to have been a widening awareness of the need for a large-scale reorganisation of the British cotton industry.[33] Keynes had called, for example, for substantial measures of rationalisation, and closer co-operation and co-ordination among the disparate sections of an industry which was highly fragmented both vertically and horizontally, and within which there was traditionally little inclination to work together. As he said in his speech to the great assembly in Manchester Town Hall in September 1927, 'Lancashire men are lions against the rest of the world, but in my experience they are terribly afraid of one another'.[34]

It may be that the example of Japan had something to do with the emergence of a willingness among Lancashire cotton interests to collaborate more closely with each other. When there had been any inclination among them to consider the sources of Japan's competitive strength rather than – like Sir Edward Crowe – her apparent weaknesses, the large scale of enterprise in Japan, the high degree of integration exhibited by the main JCSA firms, and the tendency among them to concentrate on long-run production of a few standard fabrics attracted a certain amount of attention. So did the close links between Japanese manufacturing firms, their raw cotton suppliers and their merchanting agents, all sections being dominated by small numbers of large concerns. It is fair to say, though, that in the view prevalent in Lancashire, the advantages the Japanese derived from these things were subsidiary to those which were perceived to result from very low labour costs and government subsidies.[35]

At all events, the spirit of co-operation and co-ordination which Keynes had tried to summon forth in Lancashire seemed to be starting to manifest itself in concrete form with the proposals put forward in 1928 by John Tattersall and John Ryan of the Cotton Yarn Association, together with K.D. Stewart, a textile merchant, which led in the following year to the creation of the Lancashire Cotton Corporation (LCC). Ryan and Stewart were well known advocates of the application of vertical integration and large-scale organisation to the Lancashire cotton industry. Stewart in particular had been influenced in some degree by what he had seen during a visit to Osaka a couple of years earlier.[36] In their hands the LCC might just have become the model for rationalisation in Lancashire at large. But they were not free agents who could make use of the LCC for the unfettered implementation of their ideas. The circumstances of the Corporation's establishment – by the combination under a single corporate banner of a large number of coarse spinning companies, most of them ailing financially and heavily indebted to their bankers – gave the upper hand in the combine to Montague Norman, Governor of the Bank of England. And Norman had backed the combine, as one recent writer has put it, more out of an interest 'in getting the banks out of trouble, by de-coupling them from continuing commitments to the spinning section, than in the prospects of the LCC as an industrial enterprise'.[37] The coming of the great slump in 1929, so soon after the LCC's establishment, was an additional factor in the Corporation's failure to become a powerful symbol of the benefits of large scale and vertical integration.

While Lancashire was taken up with the process of rationalisation in 1928 and 1929, the problem of Japanese competition seemed to have been put on the back burner. The *Manchester Chamber of Commerce Monthly Record*, for example, had little of substance to say about Japan in 1929. There was a brief but heated argument in the *Manchester Guardian Commercial* in April and May, however, when Freda Utley – after a visit to Japan – challenged the belief strongly held by Lancashire weavers that Japan enjoyed no advantage in terms of labour cost per unit of output over Britain. The exchange was not conclusive, though the *Commercial's* editor tended to side with his contributor rather than her critics, who included Ryan of the LCC and J.H. Grey of the Cotton Spinners' and Manufacturers' Association.[38] The publication by Utley in 1931 of *Lancashire and the Far East*, containing a very detailed consideration of Japan's competitive advantages, also provoked a wave of hostility, and not just among participants in the Lancashire cotton trade who found in hard to accept that their traditional supremacy could be decisively challenged by such an industrial Johnny-come-lately. *Lancashire and the Far East* was also apparently debarred from the library of the London School of Economics by order of Sir William Beveridge himself.[39]

IV

By the time Utley's book was published, the issue of Japanese competition had come back on to Lancashire's agenda with a vengeance. Japanese firms, especially the large combines which dominated the JCSA and the export trade, had reacted to the difficulties of 1927–28, to the cost-increasing implications of the Japanese Factory Law of 1926 (which banned night work for women from 1929), and to the deflationary pressures applied to the Japanese economy by the 1929 Minseito government in preparation for a return to the Gold Standard, by investing heavily in new plant.[40] Finance was no problem to them, as they had enjoyed handsome profits throughout the 1920s, unlike most of their English counterparts.[41] Their productivity grew at phenomenal rates, as they brought in more high-draft ring spinning frames and automatic looms, increasingly of Japanese design and manufacture. G.C. Allen reckoned that output per worker in JCSA spinning mills grew by 32 per cent between 1929 and 1935, and in JCSA weaving sheds by 37 per cent.[42] The effects of this technological advance were heavily reinforced by the decision of the Japanese government in December 1931 to abandon the gold standard, so recently attained, and to devalue the yen by no less than 60 per cent against the US dollar. Britain, of course, had already gone off gold some months earlier, and sterling too had fallen against the dollar. British exporters expected to derive some benefit from the pound's decline, and were horrified to see the yen fall much further. In 1933, by which time some stability was returning to the exchanges, the value of the yen against sterling was 42 per cent lower than it had been in the spring of 1931.[43]

The devaluation of the yen had dramatic effects, denounced by the Federation of British Industry as enabling the Japanese 'to embark on a reckless national sales policy with disastrous results to British and other traders in various markets of the world'.[44] The impact of this so-called recklessness was perhaps most severely felt by Lancashire, as between 1931 and 1935 the volume of exports of Japanese cotton goods all but doubled.[45] Lancashire's exports slumped catastrophically in 1930 and 1931, and never really recovered. India, for example, which had absorbed 1,374 million square yards of British piece goods in 1929 took only 356 million in 1937.[46] It was true that Indian tariff policy against imports from Britain had hardened in 1932, but that was not the chief problem. 'Japanese competition,' as Marguerite Dupree has observed, 'was taking more of Lancashire's trade than Indian tariffs were blocking'.[47] And it was not just in India that pressure from Japan had to be faced. Partly, perhaps, in response to the effects of Chinese boycotts against Japanese goods, in retaliation against Japanese military action in Shanghai in 1929 and Manchuria in 1931, the Japanese were exporting increasing quantities of piece goods to a whole range of hitherto principally British markets – Australia, East Africa, West Africa, Ceylon, Malaya and so on.[48] And the qualitative as well as the geographical range of Japanese competition was growing rapidly in the 1930s, fulfilling warnings given in the late 1920s that the Japanese were moving into finer counts.[49]

Recognising the seriousness of this devastating resurgence of Japanese competition, Manchester Chamber of Commerce in August 1930 set up a permanent service to monitor Japan's progress and disseminate information about it to the Chamber's affiliates.[50] The situation was not then, however, regarded as critical. That stage was apparently reached late in 1932, when, as Raymond Streat – the astute and well-informed Secretary of the Chamber of Commerce – observed, 'The Japanese Competition Bogey . . . has got everybody scared stiff'.[51] By that time, members of the Chamber were talking in positively apocalyptic terms about the Japanese and their ability 'to produce cotton goods and sell them at prices thirty, forty and fifty per cent below the levels which the most efficient units . . . in Britain can achieve', thereby utterly destroying Lancashire unless the British government was willing 'to go to extreme lengths to secure the preservation of our export trade'.[52] War, if only of the economic variety, against Japan was a matter of open discussion in the higher echelons of Manchester Chamber of Commerce in October 1932. 'A war of self defence', Streat argued, 'is something which everybody must be prepared to face . . . The competition of Japanese standards of life could reduce industrial Britain to a shambles'.[53] It was a very late awakening: in the following year, Japanese exports of cotton goods surpassed by a narrow margin exports from Britain and opened a gap which widened rapidly down to the outbreak of war in 1937.

Recognising Japan as the principal threat to Lancashire's position was one thing. Organising an effective response was quite another. Raymond Streat's position as Secretary of the Manchester Chamber of Commerce – which became the principal agency for the mobilisation of Lancashire's resources for the struggle – put him very much at the centre of things. And Streat found that position very frustrating and uncomfortable because, as Keynes had remarked in 1927, Lancashire men in different sections of the cotton business were terribly afraid of one another. So bad were relations between the different producers' and traders' interests that it was all but impossible to get them to work together for the good of the cotton trade as a whole. Spinners had a sense of grievance against weavers because of the unprofitably low prices they had to accept for their yarns. Weavers felt that finishers', shippers' and merchants' margins were so high as to render uncompetitively expensive at the point of sale goods which had left the weaving shed cheaper than the Japanese, and so on.[54] As an extreme example, Frank Platt, who succeeded Stewart as head of the Lancashire Cotton Corporation in 1932, would not, as a spinner, attend any function at which merchants or others whom he regarded as the spinner's natural enemies were going to be present.[55] The producers tended to see Manchester Chamber of Commerce as primarily a representative of their natural commercial enemies and were not entirely happy about entrusting their interests to the Chamber. As well as being undoubtedly a source of economic weakness, the Lancashire tradition of horizontal specialisation was a serious cause of political debility. But, towards the end of 1932, the Chamber did manage to bring the disparate producer and commercial interests together to establish a Special Committee on Japanese Competition, to promote a co-ordinated response to the Japanese.[56] However, according to Streat (who served the Committee in a secretarial capacity), sectional rivalries and suspicion plagued its existence, leading him to describe it in exasperation as 'the worst committee I have ever had anything to do with . . . a bog of mutual misunderstanding and suspicion'.[57]

Nevertheless, the Special Committee did play a part in the formulation from 1932 onwards of something like a co-ordinated strategy for coping with the pressure from Japan. There were two main strands to this. First, the Chamber of Commerce and the other representative bodies involved in the Committee tried to exert as much pressure as they could, collectively and severally, on the British, colonial and Dominion governments to take a tough line on Japanese access to their markets, by imposing or increasing tariffs or quotas on imports from Japan, and excluding Japan from 'most favoured nation' arrangements. The British government had, of course, abandoned free trade in 1932, and Lancashire already enjoyed the protection of tariffs within its own home market. It is remarkable, in fact, how thorough was the conversion to protectionism, especially against the Japanese, of the erstwhile cradle of free trade. The second line of approach to the problem of Japanese competition was to bring the Japanese – preferably in the form of representatives of the cotton trade rather than the government in the first instance – to the negotiating table, to reach agreement with them on prices and market shares. The two processes of applying pressure through commercial policy and of negotiation were not mutually exclusive. The former was used to persuade the Japanese to engage in the latter, as well as providing a means of stepping up pressure on them if negotiations flagged or failed. Raymond Streat was intimately involved in the implementation of both lines of approach, and his published *Diaries* are an invaluable source of information on progress on both fronts.

V

The first step taken by Lancashire's rather shaky united front was to open discussion with the Board of Trade with a view to limiting Japanese inroads into the West African colonial market (Nigeria, Gold Coast, Gambia and Sierra Leone). The outcome was an announcement in May 1933 that the British government was giving forthwith the requisite notice to Japan of its intention to suspend 'most favoured nation' treatment in those markets, as accorded to Japan under the Anglo-Japanese Commercial Treaty.[58] This does seem to have had the effect of persuading the Japanese to agree to negotiations with representatives of the British cotton trade to try to reach an accommodation on the problems that lay between them. The situation was confused by the action of the government of India, which proposed to modify its commercial policies in ways that would affect both Lancashire and Japan. Thus Streat and some of his colleagues found themselves engaged in two sets of talks with their Japanese counterparts: one in India, in the context of tripartite negotiations with Indian interests, and one in London with the Japanese alone. The talks in Simla in October 1933 produced little. The Japanese representatives would only discuss the Indian market. So the London conversations in February and March 1934 became the principal arena for the discussion of Anglo-Japanese problems, between the representatives of a Lancashire that was all too clearly in a desperate state of decline and those of a Japan very obviously in the ascendant.

The talks, perhaps inevitably, failed. It is clear from Streat's account[59] that the British had gone into them with the determination to seek the limitation by agreement of Japan's cotton textile exports throughout the entire world market, with the implied threat of commercial sanctions if the Japanese did not accept. In other words, there was nothing positive on offer to Japan: her market share was to be reduced one way or the other. The Japanese – one might think quite understandably – were not willing to go along with what was being proposed. In particular, they were not inclined to accept Lancashire's right to speak for the whole world. They were only willing to talk about some sort of accommodation in those markets over which the British exercised real political influence, namely the UK itself and the colonies. And they seem to have had some difficulty in seeing why they should give up a position they had created by what they saw as fair competitive means for the benefit of a less efficient, if not decadent, competitor. The talks ended in March 1934, ostensibly because neither party was willing to modify its geographical perspective. Nothing had been achieved except perhaps the exacerbation of ill-feeling between the two parties.[60]

Streat's diaries contain suggestions of bad faith on the part of the Japanese negotiators in both Simla and London, in the sense that they did not seriously intend to negotiate or to concede anything. The Simla talks had been characterised by an air of unreality and 'the profound reluctance of the Japanese to discuss anything that really matters to us'.[61] His reflections, following the London talks, on the Japanese character are of some interest for the light they cast on Lancashire's perceptions of her adversary:

> They are an inscrutable crowd . . . perhaps more completely isolated within the barriers of their own intellectual and spiritual world than we have any conception. I believe arguments and observations which we put forward simply make no impression on them, because their minds are not open to any other consideration than those in which they are naturally steeped . . . Consequently, it appears to them not merely unfortunate, but wicked and stupid if anybody, for reasons of self-defence, asks Japan to restrain herself. To do so, as we were told both in Simla and now in London, is to rob Japan of the fruits of her honest and sincere efforts. They seem to think that, if they can prove Japan to be honest, sincere and efficient, that is an end of the matter.[62]

One cannot help reflecting that much the same sort of thing might have been said by, say, a Frenchman or a Russian – or even indeed by an Indian or a Japanese – about crusading English free-traders during the nineteenth century. Once in a while, in fact, even in the higher reaches of Manchester Chamber of Commerce, there seems to have been a glimmer of awareness of the incongruity of Lancashire's fiercely protectionist stance *vis-à-vis* Japan, as in the remark let fall by the President to the

1933 Annual General Meeting. At a time when anti-Japanese feeling was running very high, T.D. Barlow had the grace to admit that he bore 'no ill-will towards the Japanese cotton industry *which is indeed doing no more than we did when we first swamped the world with cheap machine-made goods*'.[63] There was even one Lancashire voice, that of Barnard Ellinger,[64] which – in a scathing critique of his compatriots' attitudes to Japanese competition – came close to accusing them of outright hypocrisy.

The failure of the 1934 Anglo-Japanese negotiations shifted Lancashire's focus back to the possibility of putting pressure on Japan by political means. In May 1934, Walter Runciman announced in the House of Commons that, as a result of the unwillingness of the Japanese to apply voluntary restraints on their textile exports, Britain was imposing quota restrictions and other discriminatory measures against imports of Japanese textiles – silk and rayon goods as well as cotton goods – into UK and colonial markets. The Dominions had been informed of the British intention, Runciman said, but it was up to them to take their own action. He saw no reason, however, to terminate the Anglo-Japanese Commercial Treaty which had governed trade relations with Japan for more than 20 years.[65] The Manchester Special Committee on Japanese Competition tried to ensure that Dominion governments followed the British lead, all the more urgently since the Japanese had begun, from 1933 onwards, to displace Lancashire as the chief suppliers of cotton goods to Australia, New Zealand and Canada.[66] The Dominion governments, however, took rather equivocal attitudes on the question. Japan was becoming increasingly important as a purchaser of their raw materials, while the British – to protect their own depressed agricultural sector – were imposing restrictions on imports of Dominion foodstuffs. Such considerations did nothing, as Raymond Streat discovered in his dealings with the Canadians and Australians, to dispose the Dominions to give strong support to Lancashire.[67]

VI

Even amid the problems of the 1930s, there were those in Lancashire who felt that a more positively aggressive response to Japanese competition offered better prospects for the future of the county's cotton trade than the negative protectionism that had represented the main thrust of the Special Committee's activities. The fact that the attempt at rationalisation represented by the creation of the Lancashire Cotton Corporation had not materially improved the fortunes of the industry did not, it was felt in some quarters, necessarily invalidate the principle of rationalisation as a route to salvation. Chief among the advocates of a new programme of technological and organisational reform in the thirties was Sir Walter Preston, Chairman of Platt Brothers, the great

Oldham textile engineering firm which had done so much to equip Japan to challenge its home county's textile industry. Not long after the breakdown of the Anglo-Japanese talks in 1934, Preston unveiled a plan to restore, as he saw it, the fortunes of the Lancashire cotton trade.[68] The chief obstacle to competitiveness on the part of Lancashire mills, Preston maintained, was essentially technological. Bluntly, there was not a mill in Britain well enough equipped to compete with any foreign mill built in the last 15 years. But given the money, on the right terms, to build and equip an integrated spinning and weaving concern with the latest high-draft ring frames and automatic looms, Lancashire could, in his view, market cloth in India at a profit, and at prices lower than those currently being charged by the Japanese.[69]

Preston was immediately challenged by the cotton industry, led by the Federation of Master Cotton Spinners' Associations (FMCSA), to prove the validity of his case. Preston and Platts replied with proposals for a series of technical experiments and with a detailed set of costings and profit-and-loss estimates for a modern integrated factory of 26,400 high draft ring spindles and 1,029 automatic looms of the latest type. The FMCSA was highly critical of the basis of both the experiments to produce high-grade yarn from low-cost cotton and of the assumptions embodied in Preston's financial calculations with regard to raw cotton prices, interest rates, working practices and marketing in India. The wrangling and experimentation went on until late in 1936, when Preston finally admitted defeat. No doubt there was much to be said for the technical and financial objections to his idea that were put up by the practical cotton men of the FMCSA. But one senses that they were not happy about the idea of a machine-maker trespassing on their territory and telling them how their business ought to be run. The sectional rivalries and suspicions that Streat had complained about died hard. But what seems to have been the clinching argument against the Preston scheme as far as the FMCSA was concerned was contained in that section of the Federation's report on the affair headed 'Japanese Reactions'. It is worth quoting at some length for the light it sheds on Lancashire's collective state of mind by that time with regard to Japan:

> In our opinion Japanese competitive ability is based on cheap labour, subsidies and low-valued currency, which it is apparent their industrialists exploit to full advantage.
>
> If policy dictates yen at 1s. 2 1/4d. instead of 2s. 0d., why not 1s. 0d. or even less?
>
> It is therefore obvious that an attempt to set up a scheme having as its object the substitution of Japanese by English goods would initiate a price war which we should have very little chance of winning against a country which apparently develops its political policy for the development of industry by direct and indirect subsidies backed by a race instinct which renders self interest more or less subservient to a political idea. Moreover, since Japanese

> firms are earning large profits they could considerably reduce margins and still remain on a profit basis, which is very much in contrast with our own position.[70]

The Federation's negative report on the Preston scheme ended with a ringing declaration of faith in the eventual revival of world trade, and of Lancashire's leading share in it as 'discriminating buyers' turned back to Lancashire's superior products. In view of what they had just said about the Japanese, it is hard to accept that they any longer really believed this kind of ritual pronouncement. Lars Sandberg and others have argued that by the 1930s comparative advantage in the manufacture of cotton textiles had passed irretrievably from Lancashire to Japan.[71] By 1936, the millowners of Lancashire were evidently of the same opinion.

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NOTES

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1. As well as Mass and Lazonick's contribution to the present collection, see Lazonick's 'The Cotton Industry' in B. Elbaum and W. Lazonick (eds.), *The Decline of the British Economy* (Oxford, 1986), pp.18–50; L.G. Sandberg, *Lancashire in Decline: a Study in Entrepreneurship, Technology and Trade* (Columbus, Ohio, 1974); M.W. Kirby, 'The Lancashire Cotton Industry in the Inter-war Years: a Study in Organisational Change', *Business History*, Vol.XVI (1974), pp.145–59.
2. A.S. Pearse, *The Cotton Industry of Japan and China* (Manchester, 1929), pp. 18–21; S. Uyehara, *The Industry and Trade of Japan* (1926), pp.124–6.
3. K. Kato, 'Development of the Cotton Spinning and Textile Industries in Meiji Japan', *Shakai Keizai Shigaku* [*Socio-Economic History*], Vol.32 (1967), pp.22–45.
4. W.W. Lockwood, *The Economic Development of Japan* (Princeton, NJ 1968), p.31. By 1913, Japanese cloth exports were also beginning to make inroads into the Indian market: F. Utley, *Lancashire and the Far East* (1931), p.81.
5. British Association, *Britain in Recovery* (1938), p 458; Political and Economic Planning (PEP), *Report on the British Cotton Industry* (1934), p.26.
6. W.B. Cunningham, *Report on the Cotton Spinning and Weaving Industry in Japan* (HMSO, 1927), p.7.
7. G.C. Allen, *A Short Economic History of Modern Japan* (1980), p.260.
8. B.R. Mitchell, *Abstract of British Historical Statistics* (Cambridge, 1971), pp.179, 182–3.
9. On the JCSA, see especially Pearse, *Cotton Industry of Japan and China*, pp.18, 25–9. Most of Japan's looms were owned by independent commission weavers, heavily biased towards the production of narrow (15-inch) traditional fabrics for the home market. JCSA members controlled most of the looms working to international

standard widths, and exercised a measure of control over the independents *via* their virtual monopoly of yarn supplies. See also Utley, *Lancashire and the Far East*, pp.83–5.

10. Pearse, *Cotton Industry of Japan and China*, p.25; G.C. Allen, 'Recent Changes in the Organisation of the Japanese Cotton Industry', *Transactions of the Manchester Statistical Society* (hereafter cited as *TMSS*), (1936–37), p.18.
11. W.A. Graham Clark, *Cotton Goods in Japan and Their Competition in the Manchurian Market* (Washington, 1914).
12. A.S. Lewis in *Manchester Guardian*, 9 June 1911.
13. For Japanese imports of British technology, see G. Saxonhouse, 'A Tale of Technological Diffusion in the Meiji Era', *Journal of Economic History*, Vol.39 (1974), pp.149–65.
14. Mitchell, *British Historical Statistics*, pp.182–3.
15. G.W. Armitage in *Manchester Guardian Commercial* (hereafter cited as *MGC*), 12 Jan. 1928, p.33.
16. For discussion of the decline in both India and China, see Utley, *Lancashire and the Far East*, pp.33–5.
17. See, for example, *MGC Annual Review*, 26 Jan. 1928, p.36 (India), p.43 (China); *Manchester Chamber of Commerce Monthly Record* (hereafter cited as *MCC Monthly*), Vol.37 (1926), p.xiii; Vol.38 (1927), pp.xv–xviii.
18. See, for example, *MCC Monthly*, Vol.36 (1925), p.101.
19. Ibid., Vol.36 (1925), pp.176–7.
20. Ibid., Vol.36 (1925), p.219.
21 Ibid., Vol 36 (1925), pp.xxi–xxiii
22. Ibid., Vol.37 (1926), p.xxxi.
23. Ibid., Vol.37 (1926), pp.108, 175–6.
24. For the general circumstances of the crisis, see Allen, *Modern Japan*, pp.105–8; Lockwood, *Economic Development of Japan*, pp.56–9.
25. *MCC Monthly*, Vol.38 (1927), pp.53, 149.
26. Ibid., pp.281–7.
27. *MGC*, 16 Feb. 1928, p.199.
28. *MCC Monthly*, Vol.39 (1928), p.113.
29. Mitchell, *British Historical Statistics*, pp.179, 183, 186.
30. G.W. Daniels and J. Jewkes, 'The Comparative Position of the Lancashire Cotton Industry and Trade', *TMSS* (1926–27), pp.55–6.
31. *MGC*, 5 Jan. 1928, p.13.
32. Ibid.
33. See, for example, contributions to discussion following Daniels and Jewkes, 'Lancashire Cotton Industry', by Barlow, Ryan, Young and Zimmern. Also see H. Clay, in discussion following B. Ellinger, 'Lancashire's Declining Trade with China', *TMSS* (1926–27).
34. *MCC Monthly*, Vol.38 (1927), p.286 Keynes had also written extensively on the subject in 1926–7. D. Moggridge (ed.), *The Collected Writings of J.M. Keynes* (1981), Vol.XIX, pp.578–637.
35 Pearse, *Cotton Industry of Japan and China*, p.27; Ellinger, 'Lancashire's Declining Trade', pp.13–28. Both took notice of Japanese organisation. For a more conventional analysis, see *MCC Monthly*, Vol.44 (1933), p.206, or *International Cotton Bulletin*, Vol 7 (1928), pp.175–6.
36. See Stewart's contribution to discussion of Daniels and Jewkes, 'Lancashire Cotton Industry' On the formation of the Lancashire Cotton Corporation, see D.A. Farnie and S. Yonekawa, 'The Emergence of the Large Scale Firm in the Cotton Spinning Industries of the World, 1883–1938', *Textile History*, Vol.19 (1988), pp.193–4. Also see J.H. Bamberg, 'The Rationalisation of the British Cotton Industry in the Interwar Years', *Textile History*, Vol.19 (1988), p.88.
37. Bamberg, 'Rationalization', p.88.
38. *MGC*, 24 April – 9 May 1929. On the question of British manufacturing costs, see J.H. Grey's memoranda appended to Ellinger, 'Lancashire's Declining Trade'.

39. I am indebted to Dr Farnie for this information.
40. K. Inahara (ed.), *Japan Year Book 1933* (Tokyo, 1934), pp.550–1.
41. Ibid., pp.555–6; Farnie and Yonekawa, 'Emergence of the Large Scale Firm', p.192.
42. Allen, 'Japanese Cotton Industry', pp.15–18, 21.
43. Lockwood, *Economic Development of Japan*, pp.62–5.
44. Quoted in G.E. Hubbard, *Eastern Industrialisation and Its Effect on the West* (1938), p.91.
45. British Association, *Britain in Recovery*, p.444.
46. Ibid., p.459.
47. M. Dupree (ed.), *Lancashire and Whitehall: the Diary of Sir Raymond Streat* (Manchester, 1987), Vol.I, p.xxiv (hereafter cited as *Streat Diary I*).
48. Hubbard, *Eastern Industrialisation*, pp.388–9; *MCC Monthly*, Vol.41 (1930), p.242.
49. By, for example, the Padiham millowner G. Green, following his visit to Japan in 1928; *International Cotton Bulletin*, Vol.7 (1928), p.176. See also PEP, *Cotton Industry*, p.56.
50. *MCC Monthly*, Vol.41 (1930), p.242.
51. *Streat Diary I*, p.199; *MCC Monthly*, Vol.44 (1933), p.243.
52. T.D. Barlow, President of Manchester Chamber; *MCC Monthly*, Vol.44 (1933), p.36.
53. *Streat Diary I*, p.186.
54. See, for example, *MGC*, 12 Jan. 1928, p.41; also John Ryan in discussion of Ellinger, 'Lancashire's Declining Trade'.
55. *Streat Diary I*, p.xxiii.
56. Ibid., p.207.
57. Ibid., pp.281, 286.
58. Ibid., p.207. *MCC Monthly*, Vol.44 (1933), p.142.
59. *Streat Diary I*, pp.284–5, 298–302.
60. The communiqués of both sides were published in full in *International Cotton Bulletin*, Vol.12 (1934), pp.363–70. A full statement of the Japanese case was subsequently published by Shinjiro Matsuyama, Commercial Counsellor of the Japanese Embassy in London. For a summary of Matsuyama's pamphlet, see *MCC Monthly*, Vol.44 (1933), pp.245–6, which describes it as a 'dignified and responsible' statement.
61. *Streat Diary I*, p.265.
62. Ibid., p.304.
63. *MCC Monthly*, Vol.44 (1933), p.36 (my italics).
64. B. Ellinger, 'Japanese Competition with Lancashire', *MGC*, 1 July 1933, p.3. Ellinger was a distinguished statistician who also happened to be a partner in the Manchester shipping firm of Ellinger & Co.
65. *MCC Monthly*, Vol.45 (1934). p.133; *Streat Diary I*, p.284.
66. *MCC Monthly*, Vol.44 (1933), pp 138, 142; *Streat Diary I*, p.452.
67. *Streat Diary I*, pp.367–8, 452–3.
68. John Rylands University Library Manchester (Deansgate), Oldham and District Textile Employers Association Archive: 'Platt Bros.: Sir W. Preston, 1934' (hereafter cited as JRULM Oldham Archive).
69. JRULM Oldham Archive: statement at Platt Bros. Annual General Meeting. See also *House of Commons Debates*, 17 May 1934: Sir Walter was M.P. For Cheltenham, and repeated the substance of his AGM statement in the House.
70. JRULM Oldham Archive: Report on Sir W. Preston's Scheme, 17 July, 1936. FMCSA's insistence that the Japanese cotton industry was heavily subsidised represents a persistent belief in Lancashire, despite repeated assurances to the contrary by the Japanese themselves, and repeated denials by the British Consular authorities in Japan that any evidence of such subsidies could be found. See Cunningham, *Report* p.8; Sir George Sansom quoted in *MCC Monthly*, Vol.44 (1933), p.143.
71. Sandberg, *Lancashire in Decline*, Ch.10; Kirby, *Lancashire Cotton Industry*, p.158.

STRUGGLING WITH DESTINY: THE COTTON INDUSTRY, OVERSEAS TRADE POLICY AND THE COTTON BOARD, 1940–1959

By MARGUERITE W. DUPREE

Recent commentary on the experience of the British cotton industry concentrates on the supply side problems of the industry and on the behaviour of individual firms. In his influential articles, William Lazonick singles out the industry's structure as a 'constraint' on the behaviour of firms which rendered the industry incapable of competing in world markets and explains its decline during the twentieth century.[1] According to Lazonick individual firms acted 'rationally', but the structure of the industry blocked the necessary changes in technology, management and industrial relations. The vertically specialised structure with separate firms concentrating on spinning, weaving, finishing or merchanting worked well until 1914, but became a 'constraint' when the economic environment shifted. The industry failed to adopt the vertically integrated corporate structures of Japan or the United States which were more appropriate for the new environment after the First World War. Britain's problem was that economic decision-makers, lacking the means to alter existing 'constraints', in effect took them as 'given'.

This view of the 'constraints' facing cotton men and of their efforts to overcome them, while important in emphasising the structure of the industry, is too limited. Lazonick pays little attention to the demand-side 'constraints' facing firms in their overseas markets. This loss of markets arose from forces other than those which caused the failure to reorganise the industry,[2] and the 'constraints' facing firms abroad consumed much, perhaps too much, effort in attempts to alter them during the 1930s.[3] Furthermore, whereas Lazonick emphasises the inability of individual firms to alter the 'constraints' facing them, the considerable collective efforts of the industry to overcome these problems receive little attention. Yet these were both more forceful and more important to contemporaries than he acknowledges.

I have shown elsewhere that in the 1930s the cotton industry invested considerable collective effort in attempts to alter the 'constraints' facing firms, particularly with regard to overseas trade after the advent of protection of the home market in 1931 created a bargaining counter for bilateral trade negotiations.[4] As a result of these efforts, the industry forged a new relationship with government, the salient characteristics of which were extensive documentation, frequent consultation and numerous delegations on questions of the industry's overseas trade, complemented by participation in inter-industrial, and support for inter-governmental, negotiations. These efforts had some success in partially retrieving and stabilising the industry's demand position with regard to Indian tariffs, Japanese imports into British colonies, and the policy and organisation of the Board of Trade.[5]

This paper will argue that for the period from 1940 'constraints' on the demand side and the industry's collective efforts to overcome them continued to play an important role in the fortunes of British cotton, in part because after the Second World War the cotton industry was not resigned to the contraction which by 1960 was greatly to reduce its output and profits. Its statutory organisation, the Cotton Board, carried out a two-pronged policy consisting of international negotiation over markets as well as the reform of the industry itself. In so far as these international negotiations failed to prevent the loss of exports after 1950 or the increase of imports from the mid-1950s, such failures were not primarily due to weakness on the domestic reform side whether arising from structural problems,[6] from the foresight of cotton masters who saw that the industry could not compete with low-wage producers no matter how extensively it was reformed,[7] or from lack of competitiveness in quality, design and delivery of finished cloth[8] – significant as these problems were. Even more damaging to international negotiations as a strategy for preserving exports and preventing imports were shifting government overseas trade policies which used the industry as the 'spearhead' of the export drive in the late 1940s and then left it to 'stew in its own juice' in the fierce international markets which prevailed after 1952. Yet, while the Cotton Board permitted govenments to co-opt the industry in these crucial respects, the international as well as domestic efforts of the Cotton Board also allowed the industry to salvage some benefits which slowed cotton's decline.

Beginning with a brief analysis of the origins of the Cotton Board, the paper will explore the legacy of the fear of Japanese competition both in post-war plans for the industry and in the enormous effort which the staff of the Cotton Board put into the search between 1945 and 1952 for a voluntary agreement to limit export competition. In order to illuminate the combination of opportunities and problems the Cotton Board faced, the paper also will examine the industry's reaction to the recession of 1952, the campaign against purchase tax, the Japanese Payments and Trade Agreement in 1954, and the movement for protection from Commonwealth imports from 1954 until 1958 when voluntary agreements established a new pattern for commercial policy during the 1960s.

I

The Establishment of the Cotton Board

Although strictly a wartime measure, the First World War's Cotton

Control Board established a precedent for an industry-wide organisation,[9] and during the inter-war years a view emerged within the industry that the predominantly horizontal organisation both of firms and of the chief associations of employers and trade unions necessitated a central body, representative of all sections of the industry, to co-ordinate and express the views of the industry as a whole, particularly in negotiations with the government.[10] However, the Cotton Industry Act of 1939, which included a statutory Cotton Board, was suspended at the outbreak of the war, because the government believed the organisation it would create was too elaborate for wartime and its powers to set minimum prices inappropriate when the need would be for maximum prices.

None the less, the wartime Cotton Board, established by the Cotton Industry Act of March 1940 and continued in the same basic form after the war, was concerned with a wide range of issues and had some scope for influence in dealing with them. The purpose of the Cotton Board was to provide services for the benefit of the industry in general, with particular reference to the maintenance and extension of the export trade. Furthermore, the Cotton Board was to promote research into markets and production, collect and publish statistics and conduct negotiations on any matters affecting the industry, apart from wages and conditions of employment. Moreover, the Board was to advise on questions relating to the industry referred to it by any government department. Based in Manchester, it consisted of 11 members drawn from employers and trade unions in the different sections of the industry and appointed by the President of the Board of Trade. In addition, there was a chairman who had to be an 'independent person' without financial interests in the industry. Unlike the Cotton Control in the Ministry of Supply, the Cotton Board was not a government department; its members were not government employees and it was financed by a levy on the industry rather than by the Treasury.[11]

The Chairman of the Cotton Board until 1957 was Raymond Streat, whose appointment in June 1940 evolved out of his work as Secretary of the Export Council and from his broad experience with the problems of the export trade in cotton goods as Secretary of the Manchester Chamber of Commerce for 20 years.[12]

The impetus for the establishment of a wartime Cotton Board and for Streat's appointment as chairman came from the need to increase exports of cotton goods in order to help pay for the war. Nevertheless, the increasing severity of the war and the advent of Lend-Lease in April 1941 meant that exports of cotton textiles, no longer essential to pay for the war, became strictly controlled. Acting as the agent of the Board of Trade, the Cotton Board rationed the small permitted amount among markets and firms of exporters, thereby keeping the complex distribution system in a position to resume the export trade after the war. Meanwhile, the Cotton Board became an integral part of the wartime planning structure for the production of cotton goods, working closely with the Cotton Control. For example, it organised the concentration of the finishing section while planning and operating a scheme for the care and maintenance of the closed mills which assisted their reopening at the end of the war. In addition, it organised the 'Utility' scheme which supplied standard cotton cloths to meet civilian needs under clothes rationing and price control.

Streat and the Cotton Board were also active in discussions of post-war plans for the industry. Both the report of the Cotton Board's Committee on Post-war Reconstruction in 1944 and the report of the Cotton Industry Working Party in 1946 recommended the establishment of a central organisation for the industry similar to the existing Cotton Board. The government implemented the recommendations in the Industrial Organisation and Development Act, 1947, which empowered the Board of Trade to set up 'industrial development councils', modelled on the Cotton Board, for various industries. The Board of Trade's first Order under the Act established the new Cotton Board, which took over the assets and activities of the existing Board. With the same staff and headquarters in Manchester Streat agreed to use the recommendations of the Working Party as the agenda and to co-ordinate the 'partnership' between the owners, unions and government.[13]

The Cotton Board emerged from the war with the advantages of an experienced chairman and staff, an established reputation for successful work and the support of both the industry and government for its continuation. Subsequently its chairman and staff energetically encouraged increases in productivity, output and the preservation and expansion of markets. The Cotton Board was renewed by agreement of the industry and government in 1951 and 1956. In the sellers' market after the war employment increased beyond estimates,[14] and exports rose. In January 1952 its chairman was still hopeful about the industry's future. Yet five years later employment and exports had fallen, imports had entered the home market for the first time in large quantities, and the chairman had retired pessimistic about the future of the industry and the effects of the Cotton Board's efforts. After a propitious start why was the Cotton Board unable to accomplish more?

II

A Sellers' Market

Despite the sellers' market after the war, UK textile producers faced a number of problems in foreign markets. First, the industry's ability to increase output was limited. The major difficulty in this respect was labour recruitment in the face both of wage controls and of competition with other industries in Lancashire which developed during the war. In terms of investment, the industry's ability to take full advantage of the post-war sellers' market was limited by several types of government policy – direction of exports, clothes rationing, currency regulations restricting access to raw cotton, the control of machinery imports and encouragement of machinery exports – as well as by conservative attitudes within the industry. Second, the reduction of supplies during the war, with Japanese and Continental European exports cut off and UK exports restricted, had encouraged the local development of cotton manufacturing in pre-war markets, notably in Latin America, and the emergence of new exporting countries, especially the USA and India (Table 1). Third, after the war raw cotton prices gave a significant competitive advantage to the increasing number of cotton-growing countries who were manufacturing their own cotton goods for export. Because the United States government supported raw cotton prices, the world price was approximately twice the level at which countries could grow cotton. This enabled cotton-growing countries such as Egypt and especially India to operate a dual price system whereby their own industries could acquire raw cotton at lower prices.

Finally, the UK export trade became increasingly dependent on its colonial and Dominion markets (Table 2) after the loss of the Latin American market and the introduction of tariffs and quotas by newly independent India and Pakistan. Yet, these remaining markets were threatened after the war by changes in Britain's trade policy. After the UK joined GATT in 1948 the existing margins between preferential tariff rates and most-favoured-nation rates could not be increased so that Commonwealth countries could no longer raise duties against imports from other countries such as Japan in favour of British goods. Since the pre-war stabilisation of the export trade in cotton textiles rested on imperial preference combined with discrimination against Japan in the colonies, the advent of GATT made the revival of the Japanese

TABLE 1

SHARES OF WORLD EXPORTS OF COTTON TEXTILES, 1936–38, 1949, 1955

	% of the World Exports by Volume					
Exports from:	1936–38		1949		1955	
UK	29		20		12	
USA	4		19		12	
India	3		10		16	
Japan	42		16		24	
Other (incl. Europe)	22		35		36	
Total % (m yds^2)	100	(6,000)	100	(4,600)	100	(4,700)
Exports as % of World Production	18		15		12	

Source: R. Robson, *The Cotton Industry* (Manchester, 1957), pp.358–9.

TABLE 2

EXPORT MARKETS: UK COTTON PIECE GOODS, 1936, 1949, 1955

	% of Total UK Exports by Volume					
Exports to:	1936–8		1949		1955	
Scandinavia	5		4		4	
OECC	10		5		5	
British Colonies	14		30		28	
Other Colonies	3		4		9	
India & Pakistan	19		13		2	
Dominions	24		35		42	
Latin America	15		2		1	
USA	1		1		2	
Other	10		7		6	
Total % (m yds^2)	101	(1,741)	101	(904)	99	(555)

Source: R. Robson, *The Cotton Industry* (Manchester, 1957) p.22.

export trade even more threatening than was anticipated during the war.

During the war and in the post-war sellers' market there were three major developments in the strategy to meet these problems. Initially, planning and policy focused on the long-term reorganisation of the industry in order to increase its international competitiveness in anticipation of the end of the sellers' market. Long-term reorganisation, however, was damaged by the short-term needs of the 1947 export drive. The latter encouraged the second development, Anglo-American co-operation to limit Japanese textile production. These efforts culminated in the third development, the International Textile Conference in 1952, when representatives of the five major exporting areas met to explore the possibility of voluntary limitation of exports.

(a) *Postwar Plans for Trade Policy and Industrial Reorganisation*

Raymond Streat's concern for the post-war position of the cotton industry in its home and overseas markets was not entirely new in 1942 when the President of the Board of Trade asked for post-war plans. From the outbreak of the war, the efforts of Streat and the Manchester Chamber to promote exports were motivated in part by the fear of repeating the loss of export markets experienced during the First World War. Soon after he became chairman of the Cotton Board, Streat initiated the Colour, Design and Style Centre which the Cotton Board financed 'really for the post-war benefit of the industry'.[15] In a series of articles in 1941 and 1942, Streat argued that even with the war still to be won it was vital to think about 'the shape of things after the war',[16] and he presented the idea of a two-tier form for post-war international trade agreements.[17] Pointing out the lack of discussion of post-war trade policy, he urged Dalton to step into the gap and take up the issue.[18]

The reports of the Cotton Board's Committee on Post-war Reconstruction and of the Board of Trade Working Party pointed out that there would be a sellers' market after the war which would give the British cotton industry 'breathing space' to reorganise and re-equip to meet the competition in world markets which, based on the experience of the inter-war years, was likely to resume when the Japanese industry was rebuilt. With Japan in mind, the Cotton Board's Report warned of the danger to Lancashire from 'countries where labour costs are so much lower as to to obliterate our powers of competition'.[19] The Working Party Report singled out 'the special conditions affecting the development of the Japanese industry' as a major factor influencing the industry's future, and it acknowledged that it was reasonable to demand that Japan 'by her exporting methods shall not again be allowed to debase standards of employment in other countries'.[20] Neither report, however, made specific recommendations, recognising that government policy depended on international commercial policies and on other UK interests in addition to cotton.

The new era for international trade, based on the reduction of trade barriers, emerged at the end of 1945. As a condition of the December loan agreement with the United States, the British government agreed to support American proposals for a conference under the auspices of the United Nations to set up a permanent forum for discussion of commercial policy. The American proposals also implied the elimination of imperial preference, and in preparation for the conference the Board of Trade asked the Cotton Board to examine the effects on cotton exports of changes in tariffs in overseas markets. Streat supported the American proposals and wrote articles attempting to promote discussion of the implications of multilateral trade. The conference, held in London in October 1946, established the International Trade Organisation and opened the way for negotiations of tariff reductions which had implications for American tariffs as well as imperial preference. American officials informally urged Streat to encourage the British negotiators to push hard for reductions in American tariffs on cotton goods. After six months of complex bilateral negotiation an agreement – the General Agreement on Tariffs and Trade (GATT) – was signed in November 1947, establishing the long-term framework for international trade policy. In the short term, however, combined Anglo-American planning of textiles continued to allocate exports to particular markets. The Board of Trade disregarded representations by Streat that allocations forced British exporters to lose traditional markets in the long term, but early in the year he persuaded the Board to relax controls on any production for export above that allocated.[21]

For the cotton industry, the fuel and convertibility crisis in 1947 exacerbated the difficulties entailed in implementing the proposals which, developed in light of the Working Party Report, Cripps had brought to Manchester in December 1946 to encourage action for the long-term benefit of the industry. In his speech, Cripps offered the spinning section government assistance of 25 per cent of the cost of new equipment on condition that firms were in large groupings, and he urged the unions to accept double-shift working. Streat realised that 'this partnership of which I am to be permanent custodian is going to be a difficult team'.[22] Although the spinning employers agreed to accept Cripps's offer, they were 'at heart adverse to groupings'.[23] The United Federation of Textile Workers ultimately approved Cripps's offer, but the decision was not unanimous. The cardroom workers' union, representing key workers in the spinning section, voted against co-operation. Moreover, the government was 'unable or unwilling to make the taxation laws really correspond to their policy'.[24] Nevertheless, the government's offer went into operation on 1 May. By mid-November the spinners had done little to form groups of mills to qualify for the subsidy, and they were slow in placing orders for new machines. Streat attempted to prod them into action at a large meeting for all spinners. He gave assurances that groupings were not the first step towards nationalisation, and he encouraged firms that did not want to enter groupings to modernise their mills even if they did not qualify for the subsidy, though those who entered groups had first priority for supplies of machinery.[25]

The economic crisis of the summer of 1947 forced a shift in government priorities from long-term reconstruction of the industry to short-term maximisation of production for exports. It diverted government attention away from promoting domestic reform after the spinning section's reluctance to take up Cripps's offer of a subsidy for re-equipment. In an era when government took the lead in industrial reorganisation generally, it was unlikely restructuring would come about unless the government played a role. After the balance of payments crisis, in so far as the government paid attention to the cotton industry, it was with regard to maximising exports at any cost. This meant increasing production by expanding the labour force to utilise existing capacity rather than reorganising and re-equipping firms. In September 1947 Cripps brought the government's export programme to the cotton industry. He urged the industry to increase exports immediately by 10 per cent and in six months by 20 per cent. The cotton industry became the 'spearhead' of the government's export drive. As part of the export drive, the Cotton Board not only encouraged increased production by promoting labour recruitment, but it also worked to increase exports to the United States and Canada, and especially to preserve other export markets from Japanese competition by seeking to limit Japanese production at first by force and subsequently by persuasion.

(b) *Anglo-American Co-operation and the Future of the Japanese Cotton Industry*

Soon after Harold Wilson became President of the Board of Trade in October 1947, he suggested that Streat 'should go to the United States ostensibly to look for outlets for exports of cotton goods but privately to endeavour to ascertain whether the Americans could be persuaded to take reasonable action in regard to Japan'.[26] Wilson saw that the policy of the American administration in Japan was to allow the Japanese to have as large a cotton industry as they could build, while they prohibited the rebuilding of industries such as iron and steel which might be turned to military purposes. The export trade was vital to the UK as a whole as well as to Lancashire, since textiles held a key position in the government's export drive. Moreover, Lancashire had not forgotten Japanese competition during the inter-war years. There was pressure for an agreement that would either limit Japanese textile production or persuade the Americans to encourage other Japanese industries as much as textiles. Furthermore, the American cotton industry for the first time began to export a substantial portion of its production. Hence, it would be in the interests of both countries to limit Japanese textile exports.

In January 1948 Streat and the Secretary of the Cotton Board, James Broatch, travelled to the United States and Canada. During the trip they discussed the Japanese problem with officials in the American government and the British embassy, and on behalf of the Cotton Board they invited the American Cotton Textile Institute to send a delegation of leaders of the American industry to Britain for discussions with representatives of British cotton. The American delegation arrived on 1 April, and the Anglo-American Textile Conference began the next day, ending with a farewell dinner on 13 April in London attended by Cripps and Wilson. At its conclusion the delegates issued a report putting forward a four-point memorandum to be submitted to the cotton trade organisations in both countries and, if approved, presented to the British and American governments.[27]

The report issued after the conference made it clear that the Americans intended to keep their export business permanently 'at no less than present levels'.[28] Given that two-thirds of the pre-war world trade in cotton goods came from Lancashire and Japan (Table 1), and given that the United States would continue to export as much as the UK used to, then the UK could only get back to pre-war levels in a manner compatible with US export aims if either world trade in cotton textiles increased above the pre-war level or Japan's exports were considerably less than before the war. The conference put its hopes on the second alternative. The report recommended that the Japanese should be restricted to 3.5 million spindles – less than one-third of the number they had had before the war.[29]

As a result of the industry's positive reception of the report, Harold Wilson wrote to the Foreign Secretary asking him to meet a deputation from Lancashire. Bevin replied that the recommended limitation of Japanese spindles was impractical and agreed to meet Streat only. At the meeting Streat put forward an alternative to limitation of Japanese spindles. He suggested that Bevin appeal to the US government to approve an industrial mission to Japan made up of representatives of both the UK and US cotton industries to discuss the future of the Japanese industry with the American administration in Japan. Wilson agreed that the Board of Trade would draw up a paper for the Foreign Office which the British ambassador in Washington would present to the US government. It was felt that it would be important for Streat to be in Washington when this occurred to answer questions. As a result he and Broatch travelled to the US in January 1949.[30]

In the United States they met leaders of the American industry, but uncertainty about whether the American industry would approve a joint mission lingered throughout the spring and summer. Members of the Cotton Board began to consider seriously sending a mission, composed only of representatives of the British industry. A catalyst for joint action came in late October when the occupation government in Japan announced the removal of the floor on prices of Japanese exports apart from silk, creating the prospect of a flood of low-priced Japanese goods on the world market. Streat made two more trips to the United States before representatives of the American industry, the United States government and its administration in Japan agreed to the joint mission. Finally during the first week of May Streat and the British delegation flew from London to Tokyo, returning to Britain in early June shortly before the Korean War began. The visit included a long talk between Streat and General MacArthur as well as meetings with representatives of the Japanese industry and numerous mill visits. The British delegation returned via Washington and New York, where the two delegations drew up their report.[31]

The report stressed that world trade in cotton goods would be declining even in the face of increased consumption of cotton textiles. This perspective was new to the Japanese, who had an optimistic view of the growth of the export trade in the immediate future. Although no formal agreement emerged from the conference to mitigate the fears of formidable Japanese competition that prevailed in Lancashire, all three parties accepted the view that sales in foreign markets 'at unnecessarily low prices' could do no one any good and might do Japan harm, and the Japanese also agreed that their selling methods abroad would have to be improved. This loose consensus contrasted sharply with the previous British and American reliance on limitation of spindles in Japan, yet it salvaged something from the situation. As the *Economist* pointed out, 'the main significance of the Anglo-American cotton trade mission to Japan is simply that the three principal exporting industries in the cotton textile trade of the world have consulted together, exchanging information on the present state of their industries and views about the future. This is in itself new'.[32]

In the course of arranging the Anglo-American mission and restricting it to two countries, Streat promised to meet separately representatives of other major cotton industries. Dutch and French delegations visited Manchester; Streat made two trips to Paris for talks; and, at the end of 1950 he led a delegation from Lancashire to India at the invitation of the Bombay Millowners' Association. The trip differed from Streat's missions during the 1930s not only because flying reduced the time and the comfort of travel, but also because the Indian industry in 1950 was the second largest exporter of cotton textiles in the world, only slightly behind the Japanese. However, no agreements emerged regarding either market sharing or restricting Japanese imports.[33]

During 1950 Streat travelled over 30,000 miles – around the world, to the Continent, to India. One member of the Cotton Board asked 'whether Lancashire was ever likely to produce enough goods to sell on a much larger scale than she was doing at present and therefore whether the present efforts were really justified'.[34] Streat pointed out that 'in effect the discussions which the Cotton Board was arranging with representatives of the industries of other countries were "buying time" until it could be seen whether the cotton industry must remain at about its present level or whether it could expand considerably'.[35]

During 1951 Streat and the Cotton Board kept in contact with representatives of the cotton industries in European countries and Japan. Fears of Japanese competition in world markets revived during the autumn as spindleage increased and the Japanese peace treaty was discussed. Vague proposals for a mission from the Japanese cotton industry to pay a return visit to Lancashire turned into a concrete suggestion by the Japanese for a cotton conference in Manchester in 1952, including representatives of cotton industries in Japan, the USA, India, Europe and the UK.

(c) *The International Textile Conference*

Early in 1952 Streat was still cautiously optimistic. While well aware of possible problems, he did not see the resumption of the downward trend of the industry as inevitable, commenting that:

> the one question mark concerning the future which still excites me is the future of the British Cotton Industry – will it really achieve the renaissance which it has been my profound endeavour to evoke or will its retreat which began during the First World War be now renewed[?] . . . I must continue the struggle – success may yet be achieved in respectably adequate degree.[36]

The international cotton industry conference at Buxton in September 1952 organised by the Cotton Board was the culmination of the efforts to avoid the problems of Japanese competition which characterised the inter-war years. The conference was confined exclusively to businessmen; the government took no part and the Board of Trade kept aloof. Nevertheless, the conference met its immediate objectives. Delegates exchanged views about the course of trade in cotton textiles over the next few years and the shares that the different countries might succeed in getting for themselves. Furthermore, they examined the possibilities of expanding the world's consumption of cotton textiles. While the conference agreed that the volume of world trade in cotton piece goods was not likely to increase in the near future, the sum of the individual countries' estimates of future exports was significantly more than exports in 1951. The UK recorded the most optimistic estimate of exports, 1,350 million square yards compared with 865 million in 1951.[37]

Yet the International Conference also included ominous signs indicating that 1952 was a turning point for the UK cotton trade, the Cotton Board and relations between the industry and the government. The detached attitude of government ministers and Board of Trade officials towards the industry's efforts to preserve and expand its markets was in stark contrast to the active support of Cripps and Wilson for the Anglo-American Textile Conference in 1948. Also, vociferous criticism of the Cotton Board from within the industry surfaced for the first time in connection with the conference. Cyril Lord, head of a large new textile group, led a vitriolic press campaign in the *Daily Express* which took advantage of the coincidence of a conference including Japanese delegates with the worst months of the recession. During the weeks preceding the conference there were articles condemning the Japanese, the conference, the Cotton Board and Streat personally.[38] Finally, the exceptionally high estimate of exports which the the UK representatives put before the conference reflected their need to be seen by the UK industry to be taking a tough line in the face of the recession marking the end of the sellers' market.

III

The End of the Sellers' Market

(a) *The Recession*

Demand, both at home and in export markets, began to falter in mid-1951. The industry, however, maintained and even increased production and employment until the end of 1951 by working on orders in hand and producing for stock. Nevertheless, in April 1952 production in all sections plummeted, and by July it was only half the level of 12 months previously. Moreover, by July employment had dropped to 167,000 from a peak of over 300,000 in November 1951, and prices fell as firms liquidated stocks. In the autumn some recovery began. By the end of the year about half the loss in production levels in all sections apart from doubling had been recovered. By December the number employed had risen to 251,000, making good about two-thirds of the previous loss.[39]

The recession provoked mutual recrimination among sections. The spinners, for example, were anxious to maintain the minimum prices fixed by the Yarn Association, while the manufacturers, without a price ring, criticised spinners for high prices and argued for more effective competition. The manufacturers also attacked finishers over their imports of grey cloth from Japan (which accounted for one-fifth of the UK industry's output in 1951).[40]

The division of opinion within the industry which the recession induced inevitably spilled over into the Cotton Board and made it increasingly difficult for Streat to maintain an atmosphere of collaboration. There was a feeling that the Cotton Board should be doing something, but when it discussed what might be done 'there were divided opinions and frayed tempers'.[41] Streat remarked in June that 'all too often the [Cotton] Board would neither make suggestions themselves nor agree to suggestions which were put before them from the staff'.[42] For example, the latter suggested that there should be an advertising campaign to arouse interest among retail buyers in the home market, but the Board quickly dismissed the idea. Earlier in the year the merchants rejected Streat's proposal, supported by other sections, for the use of British Overseas Cottons to organise the supply of colonial markets in West Africa at low prices. Nevertheless, the Cotton Board staff reported on the situation on the basis of the most recent statistics, providing a useful corrective to the picture drawn by the newspapers which, especially during the first half of the year, was more gloomy than the actual facts.

(b) *The Campaign Against Purchase Tax*

Despite the increase in internal conflict, there was agreement within the industry and with the Cotton Board over a number of issues associated with the recession. Among these was a consensus that the government should end the Utility scheme and eliminate purchase tax on cotton goods, which the industry saw as detrimental to its export trade as well as the home market. The Utility scheme and purchase tax were linked in that Utility goods, introduced during the war to secure long runs of good-quality goods at low prices but subsequently undermined by increasingly flexible and anomalous specifications (for example, there were 539 specifications for boys' knickers), were not subject to purchase tax. A government committee recommended the abolition of the Utility scheme, but its remit did not allow it to recommend the end of purchase tax.[43] Therefore it proposed an alternative 'D' scheme, involving a gradually graded tax over a given price (D) in each range of articles. The Chancellor of the Exchequer adopted the committee's proposal retaining the purchase tax despite the united opposition of the cotton industry. Streat played a central role in the subsequent campaign to remove purchase tax from cotton and rayon goods and abolish the D scheme. The industry argued that the latter encouraged the manufacture of shoddy goods by taxing the quality products and encouraging production tailored to fit the limits of the scheme rather than to cater for export markets. Butler attempted to appease the industry in the short-run by placing £20–25 million of additional orders for textiles on the government's account. In 1955 the purchase tax on apparel and piece goods was removed, though by this time the chance to establish high quality export markets, for example in Scandinavia and the future EEC, may have been lost.

(c) *The Anglo-Japanese Payments and Trade Agreement*

Early in 1954 the government signed the Anglo-Japanese Payments and Trade Agreement which was intended to correct the imbalance in trade between Japan and the sterling area and to bring it back into balance at as high a level as possible. Before 1951 payments to and from Japan were made by sterling countries on the basis of agreements with the occupation authority and settled in dollars. Under the sterling payments agreements, first signed in August 1951 at the time of the Japanese peace treaty, all payments between Japan and the sterling area were made in sterling and the two sides conferred if the account were out of balance. During the first year of the agreement the balance was strongly in favour of Japan. In January 1952 the Commonwealth Economic Conference sought to remedy the position by an austerity campaign and increasing restrictions on imports from Japan at the same time that Japan's imports of primary commodities were rising as its industry recovered. As a result, during the year and a half beginning in mid-1952 Japan ran a serious deficit in its trade with the sterling area, buying nearly twice as much as it sold. The governments agreed to achieve balance by the UK encouraging more Japanese exports to sterling countries while maintaining the level of sterling area exports to Japan. The government notified colonial governments that they were free to remove trade barriers including quotas against Japanese imports. In addition a small quantity of rayon and cotton piece goods and apparel would be allowed to come into the UK, and the Japanese would be allowed to send £3 million-worth of piece goods to the UK to be finished and re-exported.[44]

Not only the terms of the agreement, but also the government's failure to consult the industry, outraged Lancashire and provoked criticism in the House of Commons both from the opposition (led by Harold Wilson) and from Lancashire's Tory MPs. The failure to consult the industry was particularly widely criticised. The *Manchester Guardian*, alluding to the imposition of quotas on Japanese imports into colonial markets in 1934, pointed out that the government spokesman enunciated the 'pure gospel of free trade and cheerfully threw over twenty years of his party's policy' in asserting that we cannot coerce the colonies when there are no longer balance of payments reasons for asking the colonies to restrict their imports.[45]

The government not only failed to consult the industry, but also told Streat of the terms of the agreement 'in confidence', giving him no opportunity to alter them. The sequence of events was particularly detrimental to the Cotton Board and to Streat. In January a meeting of the Cotton Board's Standing Conference on Overseas Trade Policy asked Streat to find out what was happening in the Anglo-Japanese negotiations. The official responsible at the Board of Trade assured him that the latter was pressing the cotton industry's interests in the colonial markets 'hotly all the time' and 'there was not a single item of argument or information I could supply which they did not already possess'.[46] Later in January the Board of Trade officials merely informed Streat of the result of the negotiations in confidence. But, when pressed in the House of Commons as to why the government had not consulted the industry, the government spokesman defended himself by saying that Streat had been told,[47] thus exploiting the ambiguous nature of Streat's position and of the Cotton Board more generally. On an occasion when he was representing the cotton industry's interests, Streat was treated as an appointee of the Board of Trade, thereby undermining his position in Lancashire.

The episode weakened the Cotton Board's ability to overcome the industry's sectional divisions. Streat expected there to be a united delegation from the industry to the government to protest against the Agreement; however, the spinners had 'lost all faith in central action'[48] and arranged to send their own delegation to the Board of Trade. At the same time the finishers argued for *increased* imports of Japanese grey cloth into the UK. Streat pressed for unity, and the representatives finally agreed on a joint public statement, although the separate 'clamorous deputations without any proposals for alternative policies' protested to the Board of Trade. He realised that 'it has to be faced that the Cotton Board and I personally lost a lot of prestige'.[49]

The Agreement's damage to the Cotton Board was greater than its damage to trade. Later in the year Tanganyika's announcement of its decision to open its market to a wider range of Japanese textiles confirmed critics' fears about the effects of the Agreement. Also, the industry became increasingly anxious over the prospect of Japanese membership of GATT which implied most-favoured-nation treatment for Japan's textile exports regardless of whether Japanese trade conformed to international standards. Nevertheless, the renewal during 1955 of the Anglo-Japanese Trade Agreement caused no agitation in Lancashire. The Japanese had failed to capture Lancashire's colonial markets, and a new and greater threat had emerged during the year.

(d) *The Campaign Against Duty-Free Imports from the Commonwealth*

In 1954 large imports of cotton grey cloth from India began to appear. Imports of grey cloth increased 120 per cent above the 1953 level, and nearly two-thirds of the increase was due to the increase in Indian imports. Under the terms of the Ottawa agreement and the Anglo-Indian trade agreement, imports into Britain from Commonwealth countries were free of duty and quantitative restrictions. Thus after late 1953, when India abolished its export duty on medium qualities of cloth, its exports to Britain rose sharply. Imports of grey cloth for finishing and re-export were not new, since merchants could sell more abroad than Lancashire could produce. What was new, however, was the large quantity of imports from India remaining in the home market at prices below those of Lancashire producers.

The spinning and manufacturing organisations in Lancashire argued vehemently for import controls on cloth from India and subsequently Hong Kong and Pakistan. Bypassing the Cotton Board, they sent separate delegations to the Board of Trade at the beginning of 1955. The President of the Board of Trade firmly refused to jeopardise existing trade agreements and the general policy of trade liberalisation by agreeing to their demand. In addition, he argued that import controls would lead to retaliation against exports of other British industries. However, with the general election looming, anxieties mounted in the Cabinet. Nine Conservative MPs held seats in Lancashire with majorities of less than 3,000, and these might hold the critical balance in a close election. Thus, on 24 March, in one of the last meetings before his resignation, Churchill met a delegation from the cotton industry, under the aegis of the Cotton Board with Streat as leader, which submitted the industry's case in favour of import controls and against purchase tax. Churchill assured members that urgent consideration would be given to their proposals and the government made it plain that safeguards would be applied if competition became too severe.[50]

Early in May the new Prime Minister announced the abolition of purchase tax on non-woollen textile piece goods, and simultaneously the Indian government reduced substantially the tariff on imports of Lancashire cotton piece goods. In the event, the election went well for the Conservatives in Lancashire. Yet neither of the changes placated the agitation in Lancashire for import controls, which had increased during the summer as mills closed.

At the Cotton Board's annual conference in October 1955 the President of the Board of Trade, although attacked as 'the hangman of Lancashire' by the vociferous entrepreneur Cyril Lord, announced that he had no intention of departing from the present policy of liberalising trade in order to protect Lancashire by quotas or tariffs.[51] Reinforced by pressure from the Colonial Office against any restrictions on imports from Hong Kong, the Government throughout the first half of 1956 held rigidly to its policy of free entry of cloth from Commonwealth countries. In addition, the President of the Board of Trade insisted on examining the fall in exports (Table 3). He pressed for lower prices and more efficient production, and thereby put 'pressures on the industry in its own field [while] . . . refusing to act in matters within his field'.[52]

Refusing to take 'no' for an answer after the annual conference in

TABLE 3

OUTPUT, EXPORTS, IMPORTS AND EMPLOYMENT:
UK COTTON AND ALLIED TEXTILES, SELECTED YEARS[1]

Year	Home		Exports	Output	Imports[2] (Selected)	Employment[3]
	m yds^2	% of Output	m yds^2	m yds^2	m yds^2	'000
1937	2,530	56	2002	4,532		363
1945	1,397	73	531	1928		189
1946	1,435	70	623	2,058		213
1947	1,461	70	638	2,099		228
1948	1,583	64	904	2,487		253
1949	1,613	60	1,075	2,688		268
1950	1,920	65	1,017	2,937	81	279
1951	1,986	65	1,083	3,069		286
1952	1,522	64	859	2,381		233
1953	1,798	67	886	2,684		250
1954	2,058	72	812	2,870		257
1955	1,879	73	689	2,568	188	236
1960					394	
1965[4]	1,600	84	300	1,900	223	132[5]

Sources: 1. Unless otherwise specified, R. Robson, *The Cotton Industry* (Manchester, 1957), p.346.
2. From India, Hong Kong and Pakistan. J. Singleton, 'Lancashire's Last Stand', *Economic History Review*, Vol.XXXIX No.1 (1986), p.100.
3. Robson, *Cotton Industry*, p.348.
4. C. Miles, *Lancashire Textiles* (Cambridge, 1968), p.26.
5. Estimate based on J.A. Blackburn, 'The Vanishing UK Cotton Industry', *National Westminster Bank Quarterly Review* (Nov. 1982), p.49.

1955, the Cotton Board's Conference on Overseas Trade prepared a new case to submit to the Board of Trade – the second in nine months – setting out the arguments for import controls. At the same time, Cyril Lord arranged meetings at which the Earl of Derby proposed an independent inquiry into the Lancashire case for protection against the Commonwealth imports. After the failure of its behind the scenes representations to the Board of Trade, the Cotton Board began to use more public methods of persuasion. In March 1956 the Board published its case as a pamphlet, *The Cotton Industry and the Consequences of Unlimited Imports*, and reshaped its case to present in letters to the press. Also, the staff arranged meetings to enlist the support of the FBI's Trade Policy Committeee and Conservative and Labour MPs.

While the industry continued its campaign in the press and Parliament against duty-free imports, Streat helped create an opening for a possible solution. In a conversation with the Minister of State at the Board of Trade, Toby Low, Streat passed along the Indian Trade Commissioner's suggestion that, when Nehru came to London in 1956 for a meeting of the Commonwealth Prime Ministers, Eden should raise the idea of talks between Lancashire and the Indian cotton industry about a voluntary restriction on imports. Eden then could mention this in the major speech he was to give at Padiham in mid-July. In late June there seemed more willingness in the Board of Trade to consider 'what might be done', and after the Prime Minister's speech at Padiham the possibility of negotiations between Lancashire and the cotton industries of India and Hong Kong for a voluntary limitation of imports offered some prospect of improvement.

During the first half of 1957 the Cotton Board pursued the policy of negotiation with representatives of the cotton industries in Commonwealth countries for a voluntary limitation on imports. In January the industry's mission, led by Sir Cuthbert Clegg, flew to India, where it reached a tentative agreement with representatives of the Indian industry for a limitation on their expansion of imports, but subsequent talks in Hong Kong and Pakistan failed. When Streat and the members of the Clegg delegation met the President of the Board of Trade in June, the question was firmly back in the hands of the government. Realising this, and acknowledging the industry's argument that if imports were not halted Lancashire could not be expected to invest in modernisation, Thorneycroft promised to put the issue before his Cabinet colleagues. Although there was no government action before Streat retired on 30 September, he detected a change of attitude at the Board of Trade, observing that 'inch by inch the government were really getting themselves into a position where they would not be able to do nothing . . . the position could never be the same as it was before'.[53] Thus, as he stepped down from the chairmanship, Streat could take some satisfaction in 'how completely Board of Trade thinking has come over to support our case for some action, whatever it might be'.[54] It took the government's fears of losses in Lancashire in the 1959 general election for it to achieve voluntary agreements with India, Pakistan and Hong Kong to limit their imports into the UK market. But, the groundwork had been laid by the now traditional method of inter-industrial consultations in which the Cotton Board played a central organising role followed by government negotiation and action.

IV

Conclusion

By 1960, the British cotton industry had lost out in export markets, and imports threatened the home market. In understanding how this came about it is necessary, as this paper has shown, to examine the demand side as well as the supply side of the industry. Among the most important 'constraints' on demand which the industry faced were government policies that undermined British cotton both in traditional markets and in Western Europe. In this context the Cotton Board was important as the link between the industry and government. The Cotton Board's ambiguous dual role, representing the cotton industry but also acting for the government, was often a handicap, but it also facilitated some effective pressure on government. With cotton no longer a national interest, the Board was most effective when, backed by a united industry, it lobbied politicians who felt electorally vulnerable in Lancashire.

In contrast to the inter-war years, after 1940 there was a unifying, statutory Cotton Board which did not neglect the internal reorganisation of the industry. It launched mill experiments in industrial organisation, and held highly successful annual conferences as well as special courses and conferences. Moreover, it administered the Cotton Industry (Reorganisation) Act of 1948 and the Cotton Industry Act of 1959. During the 1950s its chairman recognised the need for firms to adopt a more vertical structure.[55] Yet, although the emphasis of wartime and immediate post-war plans and policy was on internal reorganisation, the short-term needs of the export drive in 1947 hindered the development of long-term strategy and brought overseas trade policy, particularly with regard to Japan, to the fore. Using and extending methods of inter-industrial negotiation developed during the 1930s and familiar to the members of the Cotton Board and its chairman, the Board put much effort into negotiations regarding the Japanese industry, culminating in the international cotton textile conference in 1952. In addition, the Cotton Board assisted efforts to encourage colonies in West and East Africa to raise tariffs and quotas against Japanese imports after limitations on the industry were removed in 1951. It promoted discussions with the new government of Pakistan for Lancashire to purchase raw cotton in return for concessions on Lanacashire exports. Moreover, the Cotton Board promoted cotton goods in trade exhibitions and in the home market through its Colour, Design and Style Centre. At the end of the sellers' market in 1952, the Cotton Board's chairman was still optimistic about the future of the industry.

What changed in 1952 to make the Cotton Board and its chairman's position awkward and less effective was not only the return to a buyers' market and intensification of competition for world trade, for these had long been expected. True, the buyers' market certainly intensified the sectional conflicts of interest built into the structure of the Cotton Board. These disputes ensured that internal reform would not come from within the industry and were detrimental to the creation of a united policy on the demand side, as sectional organisations sent delegations separately to the Board of Trade by-passing the Cotton Board. But what fundamentally undermined the collective efforts of the Cotton Board and its chairman was the introduction into this situation of five years of unbending government free trade policy toward the cotton industry, particularly the refusal to countenance the application of trade barriers either in colonial markets or the home market. When the Government made even small gestures toward relenting, the sectional differences were submerged and the Cotton Board returned to the foreground, as in the delegation to Churchill in 1955, the removal of purchase tax, and the delegation to India, Pakistan and Hong Kong in 1957. In absence of powers to compel firms or sections to conform to a policy, the success of the Cotton Board's role as a consultative and persuasive intermediary required the government to be at least open to pressure and argument on key issues.

Writing in 1956, Streat pointed out the contrast in government policies and attitudes before and after 1951:

> We are still doing several good things but we have never had much sympathy from Thorneycroft and since 1951 the particular officials at the Board of Trade charged with our affairs have not been so friendly as their predecessors.[56]

He also recognised the detrimental effect of the Government's policy on the effectiveness of the Cotton Board, commenting shortly after his retirement that:

> I had no single ally to enable me to make a fight for it and it was better to quit. The Board of Trade might have produced an ally. But Thorneycroft never showed signs of aiding me effectively and Sir Frank Lee [the Permanent Secretary] was a confirmed pessimist as far as the cotton industry was concerned. Sir David Eccles and Sir Leslie Robinson [the new President and Permanent Secretary of the Board of Trade in 1957] both seemed disposed to be more helpful but the decay of the Cotton Board prestige in Manchester had gone too far by the time they came on the scene.[57]

The period of the mid-1950s was a deviation from the long-term overseas trade policy toward the cotton industry after the early 1930s. As critics of the Anglo-Japanese Payments and Trade Agreement pointed out, it reversed the protectionist policy established in 1934 when the government imposed a system of quotas on Japanese imports into colonial markets. Encouraged by the Cotton Board, protection was reinstated in 1958 in the form of voluntary limitations on imports from the Commonwealth agreed under threat of more formal sanctions.

Although the Cotton Board and its chairman's efforts on behalf of the industry were not limited to pressure on the government for protection, such lobbying absorbed a great deal of attention, especially with regard to Japanese exports and Commonwealth imports. Even in retrospect, taking into account recent evidence that Lancashire's loss of exports accounted for the industry's declining employment between 1950 and 1955 while increasing imports were responsible for the drop in employment from 1955–1960,[58] these efforts do not appear to have been misdirected.

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NOTES

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1. See for example, W. Lazonick, 'Industrial Relations and Technical Change: the Case of the Self-Acting Mule', *Cambridge Journal of Economics*, Vol.III (1979), pp.231–62; 'Competition, Specialization and Industrial Decline', *Journal of Economic History*, Vol.XLI (1981), pp.31–8; 'Production Relations, Labor Productivity and Choice of Technique: British and US Cotton Spinning', *Journal of Economic History*, Vol.XLI (1981), pp.491–516; 'Industrial Organization and Technological Change: The Decline of the British Cotton Industry', *Business History Review*, Vol.LVII (1983), pp.195–236; 'The Cotton Industry', in B. Elbaum and W. Lazonick (eds.), *The Decline of the British Economy* (Oxford, 1986), pp.18–50.
2. G.R. Saxonhouse and G. Wright, 'New Evidence on the Stubborn English Mule and the Cotton Industry, 1878–1920', *Economic History Review*, Vol.XXXVII (1984), pp.507–19; and W. Lazonick, 'Stubborn Mules: Some Comments' and Saxonhouse and Wright, 'Stubborn Mules and Vertical Integration: the Disappearing Constraint', *Economic History Review*, Vol.XL (1987), pp.80–94.
3. M.W. Dupree (ed.), *Lancashire and Whitehall: The Diary of Sir Raymond Streat, 1931–1957*, Vol.II (Manchester, 1987), p.66.
4. See M. Dupree, 'Fighting against Fate: The Cotton Industry and the Government during the 1930s', *Textile History*, Vol.XL No.1 (forthcoming, 1990).
5. R. Robson, *The Cotton Industry in Britain* (1957), p.17; Board of Trade, *Working Party Report: Cotton* (1946), p.120.
6. Lazonick, 'Cotton Industry', esp. p.20; F. Vibert, 'Economic Problems of the Cotton Industry', *Oxford Economic Papers*, Vol.18 (1966), pp.327–39, 342.
7. J. Singleton, 'Planning for Cotton, 1945–1951', *Economic History Review*, Vol. XLIII (1990), pp.71, 76–7; B. Vitkovitch, 'The UK Cotton Industry, 1937–1954', *Journal of Industrial Economics*, Vol.3 (1955), pp.263–4.
8. Vitkovitch, 'UK Cotton Industry', pp.259–65; Vibert, 'Economic Problems', p.319.
9. H.D. Henderson, *The Cotton Control Board* (Oxford, 1922).
10. The effort to create such a body began with the voluntary Joint Committee of Cotton Trade Organisations in 1925 and culminated with the Cotton Industry Act of 1939. See G. W. Killick, 'The History and Work of the Cotton Board', *Empire Cotton Growing Review*, Vol.XXXI (1954), pp.1–2.
11. Ibid, p.2.
12. For Raymond Streat's role as Secretary of the Manchester Chamber of Commerce and in the industry more widely, see Dupree, 'Fighting against Fate'. The Board of Trade papers in the PRO (including the minutes of the Cotton Board (BT175)), the columns of the textile press and Streat's diary provide a running commentary on the work of the Cotton Board
13. See Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.xxi–xxii, 62, 114, 138, 170–1, 182, 191, 194, 211–12, 214–16, 234–5, 313–14, 337–40, 351–3, 375–6, 384–5, 389 for accounts of. the background, writing and critical reception from outside the industry of the Cotton Board's Post-War Report; for Dalton's proposal to the Cabinet for compulsory amalgamation of the spinning section; and for Cripps's appointment of the Working Party, the bitter divisions within the Working Party, his decision to appoint Streat chairman of the post-war Cotton Board and the formation and implementation of Cripps's policy for the industry.
14. The Board of Trade Working Party estimated that 250,000 would be the maximum size possible for the labour force in spinning and weaving after the war and it might drop as low as 200,000. The labour force reached 252,500 in 1948 and a peak of 285,800 in 1951. *Working Party Report*, p.61; Robson, *Cotton Industry*, p.348.
15. Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.61, 63, 84.
16. Ibid.

17. E.R. Streat 'Post-war Trade Agreements', *Transactions of the Manchester Statistical Society* (1941–42), pp.1–36.
18. Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.105–6. Streat also discussed the post-war export trade more generally at a Nuffield College Conference on Post-war Reconstruction. Ibid., pp.63, 84.
19. Cotton Board, *Report of the Cotton Board Committee to Enquire into Post-war Problems* (Manchester, 1944), p.24.
20. *Working Party Report*, pp.122–3.
21. Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.313, 316, 366, 378–9.
22. Ibid., pp.385, 389.
23. Ibid.
24. Ibid.
25. Ibid., pp.385, 420–2.
26. PRO, BT175/4, Cotton Board Minutes, 21 Oct. 1947, p.8; see also Dupree (ed.), *Lancashire and Whitehall*, Vol.II, p.419.
27. For comments on the Conference see: Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.427–37; *Textile Mercury and Argus*, 16 April 1948, pp.550–1; *Economist*, 17 April 1948, p.649; *Manchester Guardian*, 14 April 1948.
28. Cotton Board, *Report of the Anglo-American Cotton Textile Conference, 2nd-13th April 1948* (Manchester, 1948), p.8.
29. Ibid., p.11.
30. For Streat's account of the meeting with Bevin and Wilson, see Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.465–9.
31. For the meeting with General MacArthur, see Ibid., pp.540–5.
32. *Economist*, 1 July 1950, p.34.
33. For accounts of the cotton industry mission to India see: Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.558–61; *Textile Mercury and Argus*, 10 Nov. 1950, pp.643–4; 15 Dec. 1950, pp.951–2; PRO, BT175/6, Cotton Board Minutes, 9 Jan. 1951.
34. PRO, BT175/6, Cotton Board Minutes, 27 June 1950, p.2.
35. Ibid., p.2–3.
36. Dupree (ed.), *Lancashire and Whitehall*, Vol.II, p.620. See also PRO, BT175/6, Cotton Board Minutes, 4 Jan. 1952, p.6 for Streat's comment at the end of a meeting between the Cotton Board and the President of the Board of Trade that 'there was no reason to give up their faith in the future'.
37. For accounts of the Conference see: Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.645–57; *Economist*, 20 Sept. 1952, p.712; 4 Oct. 1952, pp.43–4; 25 Oct. 1952, p.254.
38. For example, 'My Friends the Japs by – Sir Raymond', *Daily Express*, 23 Aug. 1952.
39. *Textile Mercury and Argus*, Supplement, March 1953, pp.104–5. For an analysis of the recession, see H.A. Turner and R. Smith, 'The Slump in the Cotton Industry, 1952', *Bulletin of the Oxford Institute of Statistics*, Vol.15 (1953), pp.105–28, 295–306.
40. *Economist*, 26 Jan. 1952, p.235; *Textile Mercury and Argus*, 11 Jan. 1952; Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.632–4.
41. Ibid., p.633.
42. Ibid., p.634.
43. PP1951–2, XVIII, pp.157–93. For the industry's arguments regarding purchase tax and the utility scheme see: PRO, BT175/6, Cotton Board Minutes, 4 Jan. 1952, pp.1–6; Robson, *Cotton Industry*, pp.23–4. For reactions to the 'Douglas Committee' Report see: *Manchester Guardian*, 22 Feb. 1952, p.6; *Times*, 22 Feb. 1952, pp.3, 7, 9; Dupree (ed.), *Lancashire and Whitehall*, Vol.II, pp.618–19, 635–40.
44. Dupree, ibid., pp.698–701 and sources cited there.
45. *Manchester Guardian*, 2 Feb. 1954, p.6.
46. Dupree (ed.), *Lancashire and Whitehall*, Vol.II, p.704.
47. Ibid., p.708.

48. Ibid., p.709.
49. Ibid., p.712.
50. For accounts of the meeting with Churchill, see Ibid., pp.755–64.
51. Ibid., p.779.
52. Ibid., p.794.
53. Ibid., p.930.
54. Ibid., p.931.
55. Ibid., pp.879–80.
56. Ibid., p.795.
57. Ibid., p.945.
58. J. Singleton, 'Lancashire's Last Stand: Declining Employment in the British Cotton Industry, 1950–70', *Economic History Review*, Vol.XXXIX No.1 (1986), p.103.

SHOWING THE WHITE FLAG: THE LANCASHIRE COTTON INDUSTRY, 1945–65

By JOHN SINGLETON

Although outsiders, such as John Maynard Keynes and Hugh Dalton, thought that the cotton employers of Lancashire were seriously deficient in business acumen, it is possible to argue that in fact this was the opposite of the case. A detailed consideration of the voluminous archives of the cotton industry might lead one to conclude that Lancashire's capitalists had a very shrewd understanding of the political and economic forces determining the fate of their enterprises.

From the mid-1920s onwards the prevailing mood in the industry was normally one of pessimism. This attitude was common to both employers and trade unionists. It may be characterised by a quotation from the July 1955 report of the mule spinners' union:

> Production continues to fall, the number of workpeople leaving the trade increases week by week, imports of cloth from overseas maintain their upward trend and the Government evidently is not at all perturbed about the chaotic position with which the industry is now faced . . . Whatever adjustments may be possible to bring down costs in this country they can only be a fractional part of the difference between the wages paid to the operatives employed in Lancashire and the Far East.[1]

In this paper I suggest that, in the period from 1945 to 1965, the owners and managers of the British cotton industry had little confidence in their ability to meet the challenge of overseas competition, without the assistance of a substantial measure of protection for domestic and colonial markets. Consequently, the industry's failure to modernise its fixed capital stock and to reform its working practices could be seen as the product, not of managerial slackness, but of a judicious assessment of the long term state of demand. Lancashire's self-confidence had been shattered by the experiences of the 1920s and 1930s,[2] and the events of the 1940s and 1950s failed to persuade its businessmen that there was any alternative to the further contraction of the industry. Indeed it might even be said that the primary objective of the employers, the Cotton Board, and the trade unions, was to ensure that the rate of contraction was compatible with the maintenance of the industry's collective dignity and the preservation of full employment in Lancashire.

This interpretation differs somewhat from that of William Lazonick, who argues that a restructured British cotton industry could have prospered during the twentieth century. Lazonick maintains that Lancashire suffered from the absence of a system of mass distribution, the failure of the combines to wrest control of their businesses from local managers, their consequential inability to introduce modern management procedures, and the lack of an overall strategy for the industry.[3] Whilst accepting that solutions to these problems would have been highly desirable, I am not convinced that such organisational changes would have led to a sufficiently large reduction in costs to have enabled Lancashire to compete with, for example, textile producers in Hong Kong.

In the next section a brief account will be given of the condition of the British cotton industry between 1945 and 1965, paying particular attention to changes in the capital stock and methods of labour utilisation. The following section examines the state of confidence in the industry, and suggests how this might have interacted with other factors to explain the industry's investment performance in the post-war decades. A final section discusses the absorption of the Lancashire textile industry by the large man-made fibre producers during the mid-1960s.

I

Sheltered from overseas competition, firstly by the war, and latterly by the need for industrial reconstruction in Japan, Lancashire enjoyed a period of relative prosperity during the 1940s. But after 1950 pre-war trends in the world textile trade reasserted themselves with a vengeance. Between 1950 and 1968 Britain's share of world cotton cloth exports fell from 15.6 per cent to 2.8 per cent, and employment in the spinning and weaving sections declined from 244,000 to 81,000.[4] In 1958 Britain became a net importer of cotton cloth for the first time since before the industrial revolution. Lancashire's remaining mass export markets in South Africa, Australia, and colonial Africa were lost during this period, as indigenous producers were established behind protective walls, and deliveries from India, Japan, Hong Kong, and Pakistan continued to undercut British cloth prices.

It has been possible, with the assistance of a growth accounting model, to determine which factors had the greatest impact on employment in British cotton textiles during different phases of the post-war era. Falling exports accounted for 28,000 out of a total of 35,000 jobs lost between 1950 and 1955. Between 1955 and 1960 rising imports accounted for 33,000 out of 64,000 job losses, while during the 1960s a fall in domestic demand was the dominant influence, due to such factors as competition from the warp knitting industry.[5]

This decline in output and employment was accompanied by a substantial reduction in the industry's capital stock. Between 1950 and 1965 the number of mule spindles in place in British mills fell from 19.0 million to 0.9 million, while ring spindleage declined from 10.3 million to 4.9 million. The total number of looms in place dropped from 358,000 in

TABLE 1

COMPARATIVE INVESTMENT EXPENDITURE PER OPERATIVE IN THE COTTON INDUSTRIES OF SELECTED COUNTRIES, 1954–63
(Figures in $US)

	France	Holland	Italy	Japan	UK
1954	113.9	191.2	n.a	44.2	80.0+
1955	129.8	190.0	n.a.	81.2	99.3+
1959	179.0	231.1	114.5	73.2	148.8++
1960	176.5	284.0	151.7	128.0	209.0++
1961	243.9	448.5*	144.3	119.0	331.5++
1962	292.7	379.3*	159.5	105.4	342.4
1963	296.5	n.k.	178.3	97.4	n.k.

Notes: * including rayon and linen.
+ including hosiery and footwear.
++ including finishing.
French data excludes buildings.
Japanese data excludes weaving.

Source: OECD, *Modern Cotton Industry: A Capital Intensive Industry* (Paris, 1965), Tables I, II, pp.110–1.

1950 to 114,000 in 1965.[6]

Comparative investment figures are difficult to obtain, but Table 1 shows some OECD data gathered during the 1950s and early 1960s. Throughout the 1950s investment expenditure per worker in British cotton textiles compared unfavourably with that in France and Holland, the other high wage economies in the group. The improvement in the early 1960s was probably a result of the investment subsidies offered under the 1959 Cotton Industry Act. Of course these figures are hardly conclusive, due to differences in the method of calculating the series for each country, but they give some indication of the technical lag between Lancashire and other parts of Western Europe. There is no ambiguity about the data relating to the stock of automatic looms. As late as 1964 a mere 37 per cent of British looms were either fully or semi-automatic, compared with 100 per cent in the US, 69 per cent in France, 86 per cent in Italy, and 86 per cent in Hong Kong. Between 1952 and 1964 the number of automatic looms in place in British cotton textile mills rose by a mere 8,000, an increase of 24 per cent over the 1952 figure.[7] British cotton textile firms were comparatively slow to introduce the latest technological advances, such as the shuttleless loom, which operated by means of a jet of air or water. In 1958 only 0.1 per cent of Lancashire's looms were shuttleless, compared with 0.3 per cent in France, 0.5 per cent in West Germany, and 0.9 per cent in Sweden.[8] Lancashire's expenditure on research and development was also of a relatively low order. In 1950–51 the Federation of British Industries calculated that the textile industry (including other fibres) spent 0.5 per cent of its turnover on R&D, compared with 2.4 per cent in the chemical industry, 3.2 per cent in electrical engineering, and 5.1 per cent in the scientific instruments industry.[9]

Changes in labour practices occurred at a snail's pace throughout the 1940s and 1950s. In 1945 cotton spinning and weaving were still reliant upon systems of labour utilisation and wage lists which had been devised in the nineteenth century.[10] Sir Stafford Cripps, the President of the Board of Trade in the new Labour government, put pressure on the employers and trade unions to co-operate with official investigations into the efficiency of labour utilisation. Fears had been raised by the Platt Report of 1944, which estimated that British spinning operatives produced between 18 and 49 per cent less yarn per hour than their US colleagues, while British weavers made between 56 and 67 per cent less cloth per hour than US workers.[11] The resultant Evershed list of 1946 for mule spinners, and Aronson list of 1948 for ring spinners and cardroom workers, introduced modest changes to the old manning arrangements.[12] The Cotton Manufacturing Commission (CMC) list of 1949 for non-automatic loom weavers had the advantage of being based on the application of work study techniques, but unlike the other reformed lists, its introduction was a matter for negotiation at mill level. By the end of 1950 only 4 per cent of weaving mills had introduced the CMC system.[13] These new manning agreements had little immediate effect on labour productivity, which was roughly constant in spinning between 1948 and 1952, while in weaving it rose by a mere 1.8 per cent per annum over the same period.[14]

During the 1950s and early 1960s there was a gradual trend towards greater variety in forms of labour utilisation and payment. Automatic loom sheds had never been the subject of a centrally determined manning agreement, but in spinning too there was now a movement towards the adoption of agreements at mill level based on the findings of work studies. By 1953 38 per cent of spinning mills had introduced some form of work measurement system in at least one department.[15] Also in 1953 the ring spinning employers decided that they were 'now in a position to negotiate central work study agreements with the operatives'.[16] Indeed in 1956 such an agreement was signed, enabling workloads to be recalculated from time to time, to take into account improvements in production techniques. In 1962 48 per cent of card and ring rooms were employing this more flexible system.[17] A modest amount of opposition to the CMC system in the Nelson and Colne areas, which were enjoying particularly high wages under the earlier wage lists, delayed its progress, but by the 1960s only a minority of workers continued to be paid under the old Uniform List.[18] The rate of change in spinning and weaving was steady but slow. Between 1950 and 1965 annual yarn output per operative rose by 34 per cent, and annual cloth output per operative increased by 23 per cent.[19] Given the decline in overall cotton textile production during this period, it seems clear that this rate of growth in labour productivity was insufficient for the long term viability of the industry.

It is not my intention to suggest that there were no pockets of prosperity in the cotton industry during the 1950s. Firms which specialised in producing cloth for industrial users could still plan for the future with a degree of optimism. Kenyons of Bury was highly successful in the production of wet felts, and had no difficulty justifying the installation of larger looms and the reconstruction of its finishing plant.[20] Bottomleys of Mossley was engaged in the lucrative trade of tyre fabric manufacturing and was able to expand into additional premises during the 1950s, while James Nelson of Nelson continued to develop its thriving rayon business.[21] Moreover, there was always scope for the true entrepreneur, such as Cyril Lord, who bought and sold mills in Lancashire, Ulster, and South Africa with an almost wild abandon.[22] Nevertheless it remains the case that success was the exception rather than the rule in the Lancashire cotton industry of the 1950s and early 1960s.

II

Several factors could be advanced as possible explanations for Lancashire's failure to respond positively to the re-emergence of Asian competition. This section will consider two main alternatives: firstly, that obstructive trade union tactics inhibited investment and the reform of labour practices; and, secondly, that the depth of the industry's long-term crisis convinced a decisive body of opinion in Lancashire that further resistance to market forces was futile.

Lancashire's textile industry had experienced several major disputes during the 1920s and 1930s, culminating in the violent controversy over manning levels in the weaving sheds around Burnley during 1930–32. The persistence of high levels of unemployment in the north-west served to heighten the degree of hostility against the employers.[23] These tensions were moderated during the Second World War, and in the years of Labour government which followed, the unions found themselves increasingly incorporated into the planning process at national and industry levels.[24] Sir Stafford Cripps, with his penchant for tripartite decision-making, was determined that the trade unions would play a full role in the Cotton Board, the Board of Trade Working Party on the future of the cotton industry, and the commissions established to devise new wage lists.[25]

With one or two exceptions, the leaders of the cotton unions were anxious to participate with enthusiasm in the consultative process. Andrew Naesmith, the general secretary of the Amalgamated Weavers' Association (AWA), was a prime example of their new attitude. He hailed as 'revolutionary' the CMC list, an agreement which promised higher workloads and even gave recognition to the use of work measurement techniques.[26] Naesmith accepted that changes in labour utilisation were necessary to enable the industry to increase its output and improve its competitiveness. When an attempt to introduce the new list at the Perseverance Mill, Padiham, resulted in a strike, Naesmith claimed that the operatives and local officials involved were acting out of 'blind, biased and unreasonable prejudice'.[27] Given the experiences of the 1930s it is surprising how little opposition there was to such innovations. In 1945 the Cardroom Workers, under the influence of A.C.C. Robertson of Oldham, were the least enamoured of the main amalgamations about the reform of traditional manning arrangements; but, by 1950, even they were co-operating with English Sewing Cotton and Greenhalgh and Shaw in the determination of manning levels according to work measurement principles.[28] This evidence suggests that, had the employers wanted to speed up the pace of reform on the shopfloor during the 1950s, they would have received a substantial degree of co-operation from the operatives' representatives.

Shift working was another sphere in which the unions were prepared to make major concessions from their pre-war position of total opposition. Firms which were able to operate expensive new equipment for longer hours each day had an opportunity to spread their high fixed capital costs over a larger output. Both employer and union representatives on the 1946 Board of Trade Working Party on cotton saw this point, and concluded that: 'the Lancashire cotton industry will be unable to support the capital charges of re-equipment and remain competitive with other countries, without going over to a large measure of two-shift working'.[29] When Sir Stafford Cripps proposed a 25 per cent re-equipment grant for spinning mills in 1946–47, he made introduction of the scheme dependent upon the unions' acceptance of the principle of double-day shift working, an assurance which was forthcoming by March 1947.[30] The weaving unions turned a blind eye to double-shift working in automatic loom sheds in the late 1940s; in fact, by 1950, when a formal agreement to permit such activity was signed, 48 per cent of the firms possessing automatic looms were already operating a double day shift system.[31] Moreover, it should not be thought that the unions exacted excessive premia for their shift workers; R.L. Marris has shown that in real terms shift premia for cotton operatives were comparable with those in the rest of British industry.[32]

Night shift working was another matter: Under the Factory Acts it was illegal for women to work at night. During the 1950s new equipment became increasingly expensive. In 1957 T. Barna estimated that the replacement cost of a cotton or wool mill in 1955 was £2,790 per operative (£1,240 in buildings plus £1,550 in machinery) compared with an average replacement cost of £1,850 per worker in British manufacturing industry as a whole.[33] The arguments in favour of allowing men to work night shifts were becoming increasingly persuasive. Lewis Wright, the successor to Naesmith as leader of the AWA, declared in 1958 that: 'If we are to encourage capital investment in new machinery shift working would seem to be a necessity'.[34] In the spinning section a general agreement on night shift working for men in ring rooms was concluded in February 1960; and in weaving 62 mills had introduced a three shift system under union supervision by 1961'.[35] Lancashire increasingly turned to the immigrant community in the 1960s to supply additional male night shift workers.[36]

Despite the co-operative attitude of the trade unions, Lancashire continued to lag behind its overseas competitors in the adoption of shift working during the 1950s and 1960s. According to the OECD, the average British cotton loom was in operation for 2,925 hours during 1963, compared with 3,671 hours for a French loom, 4,736 hours for a Japanese loom, and 6,345 hours for a US loom.[37] Since there were so few constraints on the introduction of shift systems, one is left with the suspicion that many firms simply did not require to operate their equipment on a multiple shift basis; indeed, unless they were installing new machinery, there was no incentive whatsoever for them to do so. Low levels of shift working may have been the result rather than a cause of low investment in Lancashire.

Firms will invest in new technology and spend time introducing improved labour practices only if they are reasonably confident that such efforts will give them a competitive edge in the market. Investment appraisal is not a precise science. The expected return on an investment project depends on the assumptions which are made about the future state of demand and the prices of goods supplied by competitors. To a significant degree, these assumptions will be influenced by the prevailing mood of the industry concerned. There is a considerable body of evidence to support the view that, in Lancashire, the mood was one of deep despondency after 1945.

Although the cotton industry appeared to be thriving during the 1940s, it was generally accepted that Lancashire would face a serious crisis as soon as Japanese textile production had recovered from the war. In 1944 the Cotton Board Committee to Enquire into Post War Problems warned that: 'if the very low labour cost countries are going to enjoy equal access to markets . . . only a limited export trade in specialities will remain to the British cotton industry after the world shortage is overcome'.[38] Japan was not the only threat. A weaving employer, J.D. Greenwood, assured his colleagues in 1945 that, if India adopted the automatic loom, 'we should be in a hopeless position . . . [Moreover] The Indian mills had made vast amounts of money [in the war] which was available for modernisation'.[39]

As the decade wore on, the industry's concern grew. Ernest Bevin, the Foreign Secretary, was pestered by Cotton Board representatives who wanted him to restrict the development of the cotton industry in post-war Japan. In 1949 a Cotton Board delegation even went to Tokyo to plead with General MacArthur not to give the Japanese textile producers a free rein.[40] These efforts were to no avail. The Allies had no intention of subsidising the Japanese economy indefinitely, and therefore it was necessary for them to encourage the recovery of those industries which could have no military purposes, of which cotton was a prime example. On his return to England, Sir Raymond Streat, the chairman of the Cotton Board, who had led the Tokyo delegation, explained his fear that Japan was in danger of obtaining a 'disproportionately large share of the world trade in cotton textiles . . . [and that] the policy to be pursued by the [Lancashire] industry in regard to labour recruitment and capital investment depended upon what action the Government was likely to take'.[41] Sir Cuthbert Clegg, another member of the Tokyo mission, alarmed fellow businessmen with reports of a mill at Osaka which had 123,000 modern rings, 840 Toyoda automatic looms, and operated a two shift system with complements of 24 looms per weaver.[42]

Given such uncertainty, it is not too difficult to deduce the reason for the failure of Stafford Cripps's 1948 spinning re-equipment subsidy. Only £2.6 million out of a total grant on offer of £12 million was claimed by the spinners.[43] There was never any suggestion that the collapse of the scheme was due to a shortage of plant for the production of new spinning machinery. The dominant supplier, the Textile Machinery Manufacturers Ltd., was operating with a substantial degree of surplus capacity, and in April 1948 it had to lay off 112 workers from the works near Manchester which had been leased in anticipation of a buoyant post-war demand for spinning machinery.[44] Although it cannot be denied that some of the provisions of the scheme, which discriminated against applications from small firms, were unpopular, such considerations would be insufficient to explain the extent of the initiative's failure. At a time of high profits and high demand, with ample capacity in the engineering works, the best explanation of the industry's response to the Cripps scheme would seem to be that spinners had no confidence that their prosperity would last, and saw the subsidy as a poisoned chalice. After all, firms still had to pay 75 per cent of the cost of the new equipment. In June 1948 Sir Raymond Streat told the Cotton Board that it was unfair for the government to expect people to invest when it had no intention of protecting the industry against Japan. On this occasion he was speaking for most of the employers in Lancashire.[45]

The industry's fears for the future were justified by the experiences of the 1950s. Falling demand was reflected in an alarming growth of excess capacity. In 1954, which was Lancashire's most prosperous year between the boom of 1951 and the implementation of the 1959 Cotton Industry Act, a mere 78 per cent of spindles and 77 per cent of looms in running mills were in use. To put this into perspective, between 1958 and 1975 capacity utilization in UK manufacturing as a whole averaged 94.4 per cent in peaks and 82.9 per cent in troughs of the cycle.[46] Profits and dividends were cut. The average post-tax profit at current prices of the leading cotton textile firms dropped from £762,000 in 1951 to £120,000 in 1959.[47] Table 2 shows the somewhat less dramatic fall in dividends over the same period. Amid the general gloom of 1956 the largest firm in the industry, the Lancashire Cotton Corporation, was forced to reduce its re-equipment expenditure in the attempt to maintain dividends at a

TABLE 2

DIVIDENDS AND SHARE PRICES OF THE LEADING COTTON TEXTILE FIRMS, 1950–63

	Dividend	Cotton Share Index	Industrial Share Index
	Per cent	1950 = 100	
1950	16.96	100	100
1951	19.00	122	103
1952	17.42	84	94
1953	11.94	120	104
1954	13.58	99	136
1955	14.99	81	155
1956	13.23	72	144
1957	12.72	65	151
1958	10.79	63	167
1959	9.73	101	229
1960	12.48	101	278
1961	14.82	74	286
1962	12.83	67	265
1963	8.09	91	282

Sources: *Tattersall's Annual Cotton Trade Review*; *Annual Abstract of Statistics*.

reasonable level.[48] It is hardly surprising that under these pressures confidence in the cotton industry reached a very low ebb. According to the figures in Table 2, the price of shares in the leading cotton firms showed no overall improvement between 1950 and 1960, while share prices in British industry as a whole nearly trebled. Cotton's performance would have been even worse, had it not been for the transitory period of optimism ushered in by the 1959 Cotton Industry Act.

Although the industry continued to petition the government for firm action to curb the import of Japanese cloth into the Commonwealth, there was never any real prospect that Lancashire would meet with a positive response. Britain was afraid that any attempt to force colonial countries not to take cloth from Japan would create political friction, while restrictions against Indian cloth might have resulted in the Indians retaliating against British engineering exports. Peter Thorneycroft, the President of the Board of Trade, made his position perfectly clear in 1952, when he told delegates to the Cotton Board Conference that: 'the Government has no feather-bed to offer you and very little shelter in the harsh winds of competition which are blowing through the world today'.[49] These sentiments produced apoplexy in Manchester, and Cyril Lord, the self-appointed champion of the cotton protectionists, was later to dub Thorneycroft as the 'hangman' of Lancashire.[50] In 1953 the Cotton Board organised an international conference in Buxton, in a vain attempt to persuade the Japanese that their behaviour was leading to chronic overcapacity in the world textile trade, and the imminent prospect of chaos.[51] On the whole there was very little that could be done by Sir Raymond and his colleagues. As the spinning employers explained in their 1954 report: 'It is only necessary for a slight recession in world trade in textiles to arise and distressed and subsidised goods will pour in from every quarter of the world'.[52] Such a climate was less than encouraging for firms which were considering whether or not to re-equip their mills.

By 1955 Horrockses, a Preston firm with a pedigree stretching back to the industrial revolution, had formed the opinion that: 'with the present-day prices of automatic looms and other textile machinery . . . no matter how efficient a firm may be, it is just impossible to compete in terms of price with overseas competitors'.[53] The following year the Cotton Board reached an identical conclusion in a gloomy report on the consequences of unrestricted imports of cloth. Even with the benefit of the most up-to-date looms and ring frames, the Cotton Board argued that Lancashire could not hope to match the prices of Asian producers who used cheap labour and subsidised cotton.[54] As had been expected, the government ignored the Cotton Board's views, much to the anger of the spinning employers who retorted:

> The cotton industry's case against the present Conservative Government is that it has consistently adopted doctrinaire policies which are endangering the very existence of the cotton industry and which lead to the destruction of valuable capital investments.[55]

Non-price competition is also of great importance in the markets of advanced industrial countries. British firms in general had a poor record of competing in terms of quality and design throughout the post-war decades, as has been documented on numerous occasions.[56] Many cotton firms attempted to improve their products, for example through the introduction of crease resistant fabrics, non-shrink finishes, and new combinations of natural and man-made fibres. The cotton industry's scientific research organisation, the Shirley Institute, was at the forefront of the systematic analysis of fibres, and the development of minor process innovations, such as the electrical hygrometer, the accelerated drying hood, and the automatic size box.[57] The spinning and weaving of rayon and mixtures continued to increase in importance relative to the processing of cotton. The Calico Printers' Association enjoyed considerable success with Terylene, and there was a growing use of nylon in the cotton industry.[58]

But in even these areas of endeavour the underlying trend was one of decline. The output of mixtures and man-made fibre cloth from Lancashire's weaving sheds fell from almost 797 million square yards in 1951 to 556 million in 1970, although cotton cloth production fell at a far faster rate over this period, from 2,312 million to 720 million square yards.[59] Geoffrey Shepherd's comparative study of the cotton industries of Lancashire, the United States and Western Europe indicates that the British would have benefited from adopting a more flexible production and marketing strategy. British firms tended to think in terms of supplying mass markets, whether of grey cloth or the more sophisticated crease resistant products, since their aim was to minimise unit costs by achieving long production runs. During the 1950s Italy's textile entrepreneurs discovered that their survival depended on their ability to adapt to frequent changes in the pattern of demand. Small firms of under 100 employees and an emphasis on designing for the fashion market proved to be a successful formula for the textile districts around Como and Prato, once the old established mass market producers had collapsed.[60]

Shepherd's argument has interesting implications. The Lancashire cotton industry is frequently criticised for being dominated by firms which were too small to compete in world markets. In 1958 the five largest spinning firms controlled only 31.9 per cent of the industry's spindleage, while the five largest weavers owned a mere 11.6 per cent of capacity. That same year there were 320 weaving firms with under 200 looms.[61] Given the Italian experience it would appear that 'small was beautiful', and that Lancashire's problem may not have been the small absolute size of firms. Perhaps a greater handicap was the horizontal structure of the industry, which issued in firms' marketing policies being determined by the need to win orders from other textile firms and merchants, and only indirectly to satisfy the final consumer. In 1953 only 32 per cent of spindles and 31 per cent of looms were in the hands of vertically integrated spinning and weaving firms. By 1959 a series of medium sized amalgamations had led to an increase in the spindleage and loomage in integrated firms to 58 per cent and 35 per cent of capacity respectively.[62] Links between weaving and converting (cloth processing) firms also increased, and some firms integrated forwards into retailing. William Birtwistle, a weaving concern based in Preston and Blackburn, was notable for its chain of clothing stores.[63] But these departures from established practice usually involved large or medium sized firms. They were an attempt to revive the mass market strategy by forward integration, rather than to inaugurate a new design led strategy. In an industry which had been declining for 40 years there was little entrepreneurial talent capable of instituting more fundamental changes.

A strategy of investing in cotton textile capacity overseas would have been one possible response to the decline in the profitability of production in the UK. In fact cotton firms had a long history of involvement in textile processing in other parts of the world. The Calico Printers' Association and the Bleachers' Association had production facilities of long standing in China, Egypt, and India. After World War Two the Bradford Dyers' group invested in works in Australia and Canada, and the Fine Spinners' and Doublers' Association became involved in cotton growing in the USA and Brazil. J.& P. Coats was a well established multinational company, with manufacturing units in 30 countries.[64] Among the smaller firms Whiteheads of Rossendale invested in Africa. By the mid-1960s Whiteheads had two vertically integrated spinning and weaving plants in Rhodesia, and planned to invest a further £500,000 in production facilities in Malawi and South Africa. But Whiteheads was the exception rather than the rule, and sanctions against Rhodesia made it difficult for its plants to obtain sufficient machinery.[65] Firms which lacked self-belief and a dynamic leadership were unlikely to contemplate anything as uncertain as investing capital in an overseas country. Of those British firms which did look abroad for outlets for their capital, the most successful were J. & P. Coats and Cyril Lord. In the early 1960s Lord closed two of his UK mills and set up production in Cape Province to take advantage of South African import barriers.[66]

In the mid-1950s, Harold Wilson, who had been asked by the cotton unions to devise a socialist strategy for the industry, concluded that the situation was so desperate that an investment subsidy on its own might be insufficient to achieve the re-equipment of Lancashire's mills. He recommended the formation of a Cotton Industry Re-organisation Commission with powers to build, equip, and lease new mills to 'efficient firms'. But if firms failed to take advantage of the Commission's generosity, it would have the authority to appoint company directors who would advocate a policy of re-equipment. As a last resort, the government would be asked to buy shares in recalcitrant firms, so that they could be compelled to re-equip. Naturally this scheme would have been supported by a measure of protectionism, and it became the foundation of Labour's policy for cotton in the 1959 general election.[67]

Wilson's fears about Lancashire's unwillingness to invest regardless of the offer of public help were well founded. Several government-supported agencies, notably the Industrial and Commercial Finance Corporation (ICFC) and the Finance Corporation for Industry, had been set up in the 1940s to make finance more readily available to small and medium sized companies. These facilities failed to attract much interest from small cotton firms during the 1950s. In his evidence to the Radcliffe Committee on monetary policy, Lord Piercy, chairman of the ICFC, explained that: 'We have become very well established in Birmingham where we seem to take people's fancy. We find it very difficult in Manchester'.[68] The Association of British Chambers of Commerce conducted a survey of the effects on investment of the credit squeeze in late 1957. Out of a total of 379 textile firms in the survey, all of which had suffered a fall in turnover, or had been forced to reduce or postpone their investment programmes, since the start of the squeeze, only 19 per cent blamed high interest rates and tight money. But a further 48 per cent of these textile producers regarded their problems as the result of slack business, increased competition, and changing trading prospects.[69]

In 1949 a private Yarn Spinners' Association had been established to set margins in the spinning section. The function of this body was to take over the activities of the state's wartime pricing regime, and it was believed that it would prevent the re-emergence of the competitive price cutting which had swept the industry during the inter-war decades.[70] During 1958 the Yarn Spinners' Agreement was referred to the Restrictive Practices Court. Witnesses from the spinning industry argued that the comparative stability offered by the agreement was important for the continuation of their re-equipment strategies. J.G. Barber Lomax of Bolton pleaded with the Court that:

> We have been considerably helped in this expenditure [£15,000 of fixed capital per annum] by the existence of the Y.S.A. margins and they have given us some confidence for the future and an expectation of recouping our expenditure . . . We have certain plans in hand, but their implementation is, it is fair to say, being held up pending the result of this case . . . Because in my opinion, if the Spinners' Agreement is abolished, we will earn a good deal less profit in future – this may be an understatement – and at the moment we are doubtful whether expenditure . . . on new machinery is justifiable, in view of the uncertainty of the future.[71]

Unfortunately for Barber Lomax, the Court ruled that the spinners' price maintenance scheme was acting contrary to the public interest and it was duly abolished. During the textile recession of 1958 the Cotton Board negotiated several voluntary import quota agreements with India, Hong Kong, and Pakistan. However, these quotas were ineffective, since according to the new Cotton Board chairman, Lord Rochdale, the ceilings were 'substantially higher than any of us had ever contemplated'.[72]

The story of the cotton industry in the 1950s has been one of a downward spiral of declining demand, falling confidence, and low investment. Spirits were particularly low in the winter of 1958 when Harold Macmillan announced that the government would provide financial backing for a plan to scrap excess capacity in cotton textiles. This became the 1959 Cotton Industry Act. It seems that the purpose of this initiative was to boost the flagging prospects of the Tories in Lancashire in preparation for the general election. Conservatives in Barnoldswick had publicly repudiated the government's policy on textiles, councillors in Darwen had resigned, local election results had been discouraging, and there were fears of a Labour landslide in the north-west.[73] The government was persuaded to supplement its scrapping proposals by a new 25 per cent re-equipment subsidy. In the event there was a brief upsurge of confidence in the cotton trade, as is shown in the share index in Table 2. A total of 678,000 ring spindles and 11,000 automatic looms were purchased under the re-equipment scheme, which was a considerably lower response than had been expected: the government had hoped to stimulate investment of £80–90 million, but the industry could only manage £53.5 million.[74]

Not everyone was convinced that the 1959 Act was of much value to the industry. The 1960 annual report of the spinning employers made the heart felt point that the subsidies would not have been necessary:

'if the Government had been prepared to take the responsibility for fixing a definite ceiling on imports'.[75] For these employers it was a lack of confidence about the future rather than a craving for investment grants which was the primary determinant of the level of re-equipment. Caroline Miles calculated that the 1959 Act was equivalent to an effective rate of protection of a mere 5 per cent for two years. This theme was taken up in the House of Commons Estimates Committee's report on the working of the Act: 'Failing a speedy and satisfactory solution to the related problems of imports, marketing, and the fuller use of plant and machinery, much of the expenditure will have been to no purpose'.[76] Courtaulds' analysis of the prospects for re-equipment during the early 1960s was equally blunt:

> Because of the unsatisfactory position into which the industry has been brought by past policies, it would be necessary to accept that the well-established case for giving protection to 'infant industries' must be valid for the newly equipped potentially viable plants, at least for a sufficient period to overcome teething troubles and initial losses.[77]

The cotton industry's worst fears of the 1940s had been borne out by its fate in the 1950s and early 1960s. Increased overseas competition had produced a climate of low demand, low profitability, and low confidence. These factors interacted to ensure that investment remained at a very modest level.

III

Cotton ceased to be an independently functioning industry during the mid-1960s. Courtaulds and ICI secured either direct or indirect control over most of the major cotton textile producers in the UK. Due to their intervention, the share in total sales of the five largest spinning enterprises rose from 31.9 per cent in 1958 to 50.3 per cent in 1968, while the five firm concentration ratio in weaving increased from 11.6 per cent to 31.2 per cent during the same period.[78] Concentration levels grew faster in textiles than in any other UK manufacturing group, except the drinks industry, between 1957 and 1969.[79] Textiles ranked second among British manufacturing industries in terms of assets acquired through merger between 1955 and 1968.[80]

Courtaulds failed to develop into a major producer of synthetic fibres during the 1950s and continued to depend upon its rayon business. The cotton industry accounted for 30 per cent of Courtaulds' home deliveries of viscose staple yarn, and the board was alarmed by the instability of this market. As early as 1955 Courtaulds was considering the advisability of becoming directly involved in the Lancashire spinning and weaving industry.[81]

During 1959–60 Courtaulds held talks with English Sewing Cotton and filament rayon weavers Carrington & Dewhurst about the rationalisation of the weaving section, but nothing transpired from these explanatory discussions. After ICI's abortive takeover bid in 1962, Courtaulds' new chairman, Frank Kearton, unveiled his plans for the Northern Project, which was designed to eliminate surplus capacity in Lancashire, re-equip the remaining mills, and introduce management of a higher quality than hitherto had been available. The initial objective was for Courtaulds to obtain control of five major cotton spinning groups: English Sewing Cotton, Tootals, Fine Spinners and Doublers, the Lancashire Cotton Corporation, and Combined English Mills. One Courtaulds director described the Northern Project as 'a concept of genius, worthy of England's best days'.[82] Such optimism was admirable but exceedingly misguided. ICI, which remained a major shareholder in Courtaulds, demanded a 45 per cent stake in the scheme to prevent Courtaulds gaining a stranglehold over the markets for chemicals and nylon in the Lancashire cotton districts. Courtaulds agreed to ICI's request, but the Northern Project was abandoned in April 1963 after it had proved impossible to reach terms with all the textile combines.[83]

Thereafter events moved at an astonishing pace. Courtaulds and ICI were locked in a desperate struggle for the remnants of the cotton industry. In the summer of 1963 English Sewing Cotton obtained financial backing from Courtaulds and ICI to take over Tootals.[84] In December 1963 Courtaulds acquired the leading rayon weaving firm, James Nelsons. Between August and September 1964 Courtaulds gained outright control of the Lancashire Cotton Corporation, the Fine Spinners and Doublers Association, and Hayeshaws. By 1968 Courtaulds commanded 30 per cent of Lancashire's spindleage.[85] Edmund Dell remarked that Courtaulds 'possessed a long list of textile companies that were queueing up to be taken over'.[86] ICI preferred to act through intermediaries such as Carrington & Dewhurst and Viyella International. Viyella had its origins in the textile industries of East Anglia and the East Midlands, and its ambitious chairman, Joe Hyman, believed that he had a mission to revitalise the cotton sector. During 1963 and 1964 Viyella, in which ICI had taken a 20 per cent stake, acquired Ferguson Brothers, Clegg and Orr, the Bradford Dyers' group, Combined English Mills, Birtwistle and Leigh, and British Van Heusen. As a result of these and further interventions, by 1968 Viyella and its backers were in control of 9 per cent of the spinning capacity of the cotton industry. Viyella's interests were in spinning, weaving, hosiery, finishing, and clothing. This diversity was not unplanned and Hyman made it abundantly clear that: 'We are trying to establish the greater part of our business along vertically integrated lines'.[87]

Courtaulds and Viyella pursued a vigorous policy of rationalisation and modernisation. Between 1962 and 1969 Courtaulds invested £57 million in new buildings and machinery for its northern textile business, while numerous older mills were closed.[88] Brand new weaving mills, equipped with shuttleless looms, were built at Carlisle, Lillyhall, and Skelmersdale, and as a result of these efforts, Courtaulds managed to increase the weekly output per worker in its cotton spinning mills by 19 per cent by May 1966.[89] At Combined English Mills, Joe Hyman introduced fresh management and concentrated the group's output on a smaller range of yarns in an attempt to secure longer production runs. Seven of the 14 mills in the Combined English Mills group were closed in 1964–68, including the relatively modern (1926) Sir John Holden Mill at Astley Bridge, but annual output per worker in the surviving mills increased by 50 per cent over the same period.[90]

Despite these vigorous policies there was no long-term improvement in the industry's profitability. Although Courtaulds was able to maintain its domestic deliveries of viscose staple fibre at 80,000 tons per annum throughout the 1960s, its net profits before tax on all activities declined from 14.6 per cent of sales in 1964 to 6.7 per cent in 1972.[91] The other groups also faced considerable difficulties. Joe Hyman was unable to turn his variegated holdings into a profitable empire, and was deposed as chairman of Viyella in 1969. Carrington & Dewhurst faced collapse as its European markets declined and eventually merged with Viyella. ICI's strategy of indirect intervention in Lancashire had been no more successful than Courtaulds' more direct methods. After a brief period of success, in 1969 ICI's Heavy Organic Chemicals Division, which included its textile interests, was forced to admit to having 'the most appalling financial results . . . we didn't turn a bloody cent'.[92]

During the 1960s Courtaulds and its competitors discovered that there was more to running the cotton industry than they had thought. Investing in Lancashire simply was not worthwhile in a country which was committed to the provision of cheap textiles. The prophets of doom who had spoken so often and so despondently throughout the 1940s and 1950s had been proved correct. In the late 1960s the installation of Sulzer shuttleless looms cost £30,000 per worker under a single shift regime and £10,167 on a three-shift system.[93] Courtaulds expected, but did not often achieve, an annual rate of return of no less than 10 per cent on its investments, but it was difficult for it to know on what basis future costs and revenues should be calculated.[94] There was a tendency for Courtaulds and ICI to take an optimistic view of future trends, underestimating the growth of overseas competition; consequently they became embroiled in projects which were both extravagantly expensive and commercially unsuccessful. Kearton and Hyman had planned to overhaul the management practices of the cotton textile industry, but what they failed to realise was that the supposedly defeatist managers whom they displaced had a very well grounded understanding of the enormity of the problems facing Lancashire.

IV

This paper has shown that the terminal decline of the cotton industry during the 1950s and 1960s was not unexpected. Businessmen in cotton had very long planning horizons. They were well aware that the profits of the 1940s were a windfall benefit due to the disruption of world textile production and trading brought about by the war. It came as no surprise to the capitalists of Lancashire that Japan resumed its mass export policy during the 1950s, and that the cotton industries of India, Hong Kong, and Pakistan followed suit. The installation of new machinery was a particularly risky proposition under these circumstances. The problem was that no one was sure how quickly the market situation was going to deteriorate, and therefore it was almost impossible for them to appraise the costs and benefits of investment projects with any degree of accuracy. In the 1960s these burdens were shifted onto the man-made fibre producers, but they fared no better than their predecessors.

In the developed world the textile industries which continued to thrive were those enjoying a substantial degree of protection, for instance in the United States, and those which were able to develop more flexible organisational forms, as did part of the Italian textile sector. Textile firms in Lancashire were unable to adopt the Italian solution. To some extent their failure was due to the vertical disintegration of the industry, which separated spinners and weavers from contact with the views of the final customer. But the generally low level of confidence in the industry also had a tendency to stunt initiative. An improved mass market strategy was the only change considered by the vast majority of firms. The large man-made fibre producers followed an identical policy, although they had substantially more money to spend on new looms and spinning machinery, much of which was wasted. This paper is in accord with Lazonick's belief that greater vertical integration in production and marketing would have been of some help to the UK cotton industry, but it rejects his large firm solution as inappropriate to the competitive environment. More vertical integration would not have saved the old cotton industry, but if there had been a more dynamic pool of entrepreneurs available in Lancashire, it might have enabled a new cotton industry to arise. The *Economist* summed up the situation in May 1966, when it stated that it would have be better for the man-made fibre producers to diversify into new synthetic products, since: 'Helping textiles to health always tends to mean that Courtaulds gets the worst companies in the worst sectors, even if it gets them cheaply'.[95]

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NOTES

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THE TEXTILE MACHINE-MAKING INDUSTRY AND THE WORLD MARKET, 1870–1960

By D.A. FARNIE

CLERKS, ASSISTANTS &c. WANT PLACES

A Foreign Gentleman, speaking English, wishes to learn practically spinning and weaving cotton goods: would pay moderate premium. Address, stating number of spindles and looms, premium required and full details, E 166, at the printer's.

Advertisement placed in the Manchester Guardian, *9 August 1879, 4i, by Takeo Yamanobe (1851–1920) and answered by W.E. Briggs (1848–1903) of Rosehill Mill, Blackburn.*

During 1983 a great transformation occurred in the British balance of trade when for the first time since the fourteenth century the United Kingdom became a net importer of manufactured goods and in particular of 'machinery and transport equipment'. In 1984 Britain became a net importer of 'textile and leather machinery', so ending the era which had begun in 1771 with the shipment of the first spinning jenny to France.[1] In this process of change the role of the British textile machine-making industry had been twofold. Firstly, it had provided the Lancashire cotton industry with cheap and efficient machinery. Secondly, it had equipped with even more efficient machinery the foreign competitors of Lancashire. That function had been long fulfilled by the time that Britain became a net importer of cotton manufactures in 1960 and of textiles in 1978.

Machine-making was the foremost of the subsidiary industries which had expanded apace in Lancashire since the 1830s. Their cost-cutting function inspired Marshall in 1891 to formulate the idea of the contrast between the 'internal economies' accruing to a firm in virtue of its size and the 'external economies' available to it in virtue of its location within a hive of industry. Such a hive was formed by the mill towns of 'Cottonia': by 1900 they employed over one million in 'one vast single workshop' within a single composite business, covering two hundred square miles of the county and fostering a progressive division of labour and specialisation of function within industry.[2] The external economies so generated became a substitute for the economies of large-scale production and enabled the cotton industry to survive and to flourish upon the basis of small-scale organisation.

The secondary function of the industry was to develop the export trade, enabling Britain to dominate the world market in textile machinery for 90 years from the 1840s. The success of British industry in supplying the world market may be explained by its pioneer mechanisation of the production processes of the industry, by the stimulus given to foreign states to imitate Britain, by the consequent increase in the overseas demand for textile machines and by the comparative advantages enjoyed by Britain after the repeal in 1843 of the prohibition on the export of machinery. The vast influence of Britain upon the cotton industries of the world was an inevitable product of the rapid expansion in size of its own cotton industry. In 1840 the United Kingdom held 64 per cent of the world's spindles and 67 per cent of its power-looms. It operated until 1876 a majority of the world's power-looms and until 1890 a majority of the world's spindles. In the service of its own industry it had built up the world's largest engineering industry. That industry benefited from the incapacity of foreign industries to withstand its competition after 1843 as world demand increased for spinning machinery at an average annual rate of 2.5 per cent (1840–1913) and for weaving machinery at a rate of 3.7 per cent. The industry profited from the expansion of Britain's share of international commerce to its maximum during the 1860s. It became much more export-oriented than other branches of the engineering trades. For a century from 1843 to 1942 textile machinery supplied the most valuable portion of the exports of machinery, making a substantial contribution to the favourable balance of trade in manufactures. The engineers of Lancashire undoubtedly welcomed the growth of foreign demand for their products as the local cotton industry began to decline in relative importance under the influence of import-substitution abroad. As early as 1871 the British cotton industry reached the relative peak of its importance in the supply of the world market. During the next 40 years the average world consumption of cotton goods trebled but foreign states accounted for 92 per cent of the increment in world consumption. Machine makers served the needs of their foreign clients so well that they separated their interests from those of the Lancashire cotton industry.

One firm established a unique primacy within the British industry. Platt Bros. had been established in Oldham in 1821 and was expanded in the 1850s by John Platt (1817–72) into the largest engineering firm in the world.[3] Thereafter it maintained its primacy within the world market for some 50 years (Table 3). Platt's became the only business to manufacture a full range of machines, including looms from 1857. It could supply its clients with plans for a model mill and with the services of machine-erectors. Enterprising foreign agents were employed as well as leading Manchester merchant firms such as De Jersey & Co. and Adolphus Sington & Co. Close links were also maintained with the steam-engine manufacturers of Bolton. The firm perfected the self-acting mule and secured control over new inventions, which it would then improve and market. It benefited from Oldham's excellent facilities for technical education and by John Platt's policy of associating his leading hands with the management and the profits of the business.

I

The Expansion of Export Markets to their Peak in 1908

The contribution made by the industry to the export trade surpassed its contribution to the home market after the repeal in 1843 of the restraints upon the export of machines. Exports flowed mainly to the continent of Europe until 1914, with states importing more textile machines as they imported fewer cotton manufactures. Europe imported its maximum tonnage of British piece-goods in 1887 but its maximum tonnage of textile machinery only in 1908. Britain equipped many of the cotton spinning industries upon the Continent,[4] especially those of Germany and Russia. Germany supplied the industry with its main foreign market down to 1891 and thereafter freed itself from dependence upon Britain, as Russia did not. The Russian market was at first dominated by the interlocking firms of Platt Brothers, De Jersey & Co, and Knoop & Co., whose importance seems to have declined after the death of Ludwig Knoop in 1894. Platts supplied only 20 per cent of British exports of textile machinery to Russia between 1893 and 1913. Shipments to Russia and Germany enabled the Humber ports to surpass Liverpool in the value of their machinery exports during the years 1866–80 and 1894–1900. Liverpool's ascendancy in the trade was established by the flow of exports to the world outside Europe, where Britain equipped the cotton industries of Latin America and of Asia. From 1914 Asia surpassed Europe as a market and imported between 1904 and 1938 42 per cent of the total tonnage of British exports of textile machinery, compared to the 38 per cent taken by Europe and the 13 per cent taken by America. Both India and Japan imported their peak tonnage during the postwar boom of 1922, 14 years after Europe's peak in 1908. Platts became from 1886 more export-oriented than other firms but handled only 15 per cent of the total value of the exports of textile machinery, 1893–1913:[5] it played a relatively larger role in the trade to Asia than in that to either Europe or America.

India replaced Germany from 1891 as the industry's main foreign market and remained such for almost eighty years until 1969, Pakistan surpassing India as a market from 1963. In effect India transferred to itself the British cotton industry through the import of machinery from Lancashire,[6] so enabling local mill production of cotton cloth to surpass the volume of imports from Britain by 1918. For its part Japan expanded its spinning capacity twice as fast as India between 1870 and 1930: it derived a great stimulus from the success of the Osaka Cotton Co., which was established in 1880 and secured the services of Takeo Yamanobe, first as engineer and later as president. It imported its peak tonnage of cotton goods in 1905 but its peak tonnage of textile machinery in 1922, ranking second only to India in the volume of its imports of British textile machinery between 1904 and 1933. Japan became, through the agency of Mitsui & Co. a major client of Platt Brothers, which supplied 48 per cent of the value of British textile machinery exported to Japan between 1893 and 1913 and some 87 per cent of the two million spindles installed by 1909.[7] The superb quality of Platts' machines impressed Japanese spinners, who were keen to secure 'any improvements without adding greatly to cost'[8] and were still using Platts' machines made in 1893 over 60 years later.[9]

Until the 1890s the installation of new machinery tended to harmonise with the business cycle, both in Britain and abroad. That harmony was destroyed when new plant was installed abroad but not in Britain, where mule spindleage reached a peak in 1892 which was not to be exceeded until 1906. The interests of the machine-making industry became separated from those of the Lancashire cotton industry as export markets assumed supreme importance. No attempt was made to restrain those exports but for the first time in 1893 they were specifically recorded in the trade returns, where they continued to be listed in increasing detail.

In 1913 the United Kingdom still supplied 60 per cent of the world's exports of textile machinery. (Table 2) The British industry had however reached its peak level of production in 1906[10] and its peak volume of exports in 1908, five years before the British cotton industry reached its own maximum levels of production. By that time it had effectively transferred the mechanical sinews of production from Lancashire to the outside world: it was also facing competition from other states, especially Germany. The climacteric of 1906–8 evoked efforts to maintain sales including the organisation in 1911 of the first exhibition of textile machinery in Manchester: it was followed by four more such exhibitions held between 1914 and 1925.

The post-war price inflation raised the trade to the summit of its prosperity. Exports reached their peak value during 1921 and formed their peak proportion, 42 per cent, of the total exports of machinery in 1922. But new orders for spinning machinery from Platts had reached a peak in the week ending 15 March 1920, one month after raw cotton reached its highest price in the Liverpool market. As business confidence began to recede, existing orders began to be cancelled from 31 August 1920. Maximum profits were nevertheless made by the industry during 1921–22, averaging 24 per cent. (Table 4) It had attained the peak of its relative importance in the national economy and was thereafter undermined by the shrinkage of demand as well as by the rise of automobile engineering in the Midlands. From 1922 the home market began to be supplied in increasing volume by foreign imports and surplus capacity began to emerge in the machine-making industry of Lancashire. From 1927 Platts entered upon a decade without dividends after cotton spinning in 'Cottonia' finally ended its long career of expansion: its profits sank in 1927 by 38 per cent of their level in 1926.

II

The Export of American Technology to Lancashire

The United States early established its independence of Britain for the supply of textile machinery. It captured the domestic market in staple lines by 1830.[11] It became a net exporter of textile machinery before it became a net exporter of textiles and remained such until 1967. The US competed with the UK first in the Canadian market, reduced British shipments to Canada after 1900 and even replaced Lancashire in 1917–20 in the supply of the markets of the Far East. By 1918 its textile machine-making industry had surpassed that of the UK in the total value of its production.

American machine shops became from 1797 the source of a stream of innovations,[12] which continued to flow for a full century and outnumbered those of any other country apart from Britain. Of those inventions two proved to be of the highest importance in so far as they raised levels of productivity dramatically in both spinning and weaving. The high speed ring spinning frame was developed between 1828 and 1844 and dominated the cotton industry of New England by 1868. The ring frame then conquered the industry of Asia, that of Japan during 1889 and that of India during the 1900s.[13] The new factory industry of China established in 1890 was based exclusively upon ring spinning, like the contemporary industries of Brazil and Mexico. On the Continent of Europe ring spindles surpassed mule spindles in number during the year 1910, although they had probably established their dominance in Italy and Spain by 1903. The same trend was reflected in the industries of Russia in 1910 and of Germany in 1913. The last states to pass under the sway of the new technology were those with high quality spinning trades, such as France in 1922, Austria in 1923, Czechoslovakia in 1926 and Switzerland in 1927. The total number of mule spindles in the world outside Britain had reached a maximum during 1911 and declined sharply during the 1930s. (Table 3)

The ring frame was acclimatised in Lancashire by firms which were newcomers to the trade. Its production was pioneered by Samuel Brooks from 1872 and by Howard & Bullough from 1878. No fewer than 408 British patents for ring spindles were granted between 1867 and 1892, including 117 during the four years 1881–84 when all the leading manufacturers of Lancashire began to market the new frame, especially for the export market. Platts became by 1888 the leading makers of the ring frame and achieved its maximum sales thereof to Japan in 1896, to India in 1897 and to Russia in 1898, declining thereafter in the face of competition from Howard & Bullough and from Tweedale & Smalley. (Table 3) Lancashire itself remained loyal to the mule, especially during the last mill-building boom of 1904–8, to the mutual satisfaction of both employers and operatives.[14] Howard & Bullough was even compelled to defer to the strength of local demand and to embark upon the manufacture of mules (1902–7). The trebling of the proportion of ring spindles, from 6 per cent of the total spindleage in 1890 to 19 per cent in 1913, seems to have checked any further increase in the number of mule spindles from the maximum reached in 1913. Britain may have remained until 1936 the second largest ring spinner in the world after the US but its ring spindles were declining in number from 1927, at a slower rate indeed than mule spindles, and they only surpassed the number of mule spindles from 1959.

The mass marketing of the ring frame was undertaken by the same firm which launched the automatic cop-changing loom invented in 1894 by J.H. Northrop (1857–1940). The Draper Co. of Hopedale, Massachussetts, assumed from the 1890s the dynamic role within the industry hitherto fulfilled by Platt's and became from 1900 the largest producer of textile machinery in the US. It formed the British Northrop Loom Co. in 1902, the first foreign textile machine-making firm to be established in Lancashire. The new loom doubled and trebled the productivity of weavers and made its greatest impact in New England, where the total stock of ordinary looms reached a peak in 1909[15] and declined precipitously thereafter. Outside the US, the automatic loom spread about three times as fast as the ordinary loom between 1901 and 1928, especially after the expiry of the Northrop patents in 1912, until the world's stock of ordinary power-looms reached a maximum during 1928. The new machine was adopted more extensively on the Continent than in Britain and stimulated Japan to develop by 1926 its own Toyoda automatic shuttle-changing loom.[16] In the first Anglo-Japanese partnership in machine-making, Platt Brothers embarked upon the manufacture of the cheap Toyoda loom for a trial period of three years (1930–32).[17] The Platt-Toyoda loom proved however a grave disappointment. Only 271 were made and 70 per cent of those were for foreign customers. No repeat orders were received and manufacture was abandoned in 1932. The British Northrop Loom Co. also found its markets abroad, exporting in 1927 83 per cent of its production in competition with 19 other manufacturers of automatic looms in Europe. In the 1930s it became a leading machine-maker through the decline of the manufacturers of Lancashire looms. It then began to tap the home market but only to a limited extent so that the proportion of automatic looms in the total stock rose only from two per cent to 4.4 per cent (1930–39). It could not overcome the hostility of the operative weavers to the new device. Those weavers were largely unskilled so that prospective economies from their displacement were correspondingly limited. Lancashire had more capital than any other centre of production locked up in its immense stock of ordinary looms which were cheaper and more versatile than the Northrop as well as long-lasting. Local cotton manufacturers were undoubtedly stimulated by the advent of the new loom to increase the number of ordinary looms tended by each weaver, in the teeth of union opposition. After the 1939–45 war British Northrop expanded capacity under official pressure and then found that the expected increase in domestic sales did not occur. Only in 1964 did the world's automatic looms exceed ordinary power-looms in number, whereas ring spindles had surpassed mule spindles in 1913. The spread of such capital intensive innovations was curbed in Lancashire by such influences as the high cost of the machines, the small average size of the firm and the dominance until the 1950s of the pattern of single-shift working by a predominantly female labour-force.

III

The Growth of Foreign Competition with the United Kingdom

Textile machine-making did not remain the monopoly of a single state, so that any attempt at the unilateral restriction of exports would have proved fruitless. It nevertheless remained concentrated in a relatively small number of states in sharp contrast to the cotton textile industry. It is easy to exaggerate the contribution made by the British textile machine-makers to the development of the cotton industries of the world and difficult to measure with precision the extent of that contribution. By 1870 British manufacturers may well have supplied about 75 per cent of the spindles installed in cotton industries outside Britain.[18] Competition had however already begun as foreign engineers developed the capacity to serve their own domestic markets. Such industries arose in Switzerland, Alsace, Saxony and New England, first imitating British machines and then inventing new and more efficient machines. Between 1870 and 1913 the foundations of foreign competition in the world market were laid in engineering as well as in the cotton industry proper. (Tables 1 and 2) Such competition was facilitated by the imposition of import duties on both textile machinery and cotton manufactures: it was inhibited by the cheapness of British machinery, especially in staple lines, and by the strength of established market connections, especially maintained through the jobbing trade.

On the Continent competition came first from Switzerland and Germany. Switzerland had early established its independence of Britain for the supply of machines to its own textile industry and was competing effectively from the 1870s in the markets of Italy.[19] Germany followed the Swiss example in making cheaper copies of the best English models.[20] She developed a full range of specialised machines, especially for the manufacture of hosiery, and devised some of the best power-looms in the world. She pioneered the application of chemical technology to textiles through the mercerisation process patented in 1895. She became in succession a net exporter of hosiery machines, of weaving machines and from 1901 of textile machinery in general.[21] Germany supplied most of the imports of textile machinery into the UK when they first began to be recorded in 1901, retaining that lead until 1911. By 1913 Germany had raised the value of its exports to 63 per cent of the value of British exports. (Table 2) By then foreign engineers may well have supplied as much as half of the cotton spinning spindles installed outside Britain. The proportion furnished by foreign firms would have been more than half in the case of cotton weaving machinery, for which the demand was expanding faster than for spinning machinery. The competitive capacity of the UK was less in that market than in that for spinning machinery, and was declining in the face of foreign competition: Platts was exceptional in exporting 93 per cent of its looms (1859–1914).[22] Weaving machinery formed only one-fifth of British exports of textile machinery between 1914 and 1933 and was declining from the peak level attained in 1918.

After the 1914–18 War British engineers were challenged in Europe, in Asia and even in their home market. By 1923 Britain had become a net importer of hosiery and knitting machines, a pattern extended from 1926 to lace and net machines. From 1923 public criticism of the machine makers began to be made.[23] The British share in the value of world exports of textile machinery sank below half for the first time during 1925.(Table 2) Then the General Strike of 1926 reduced British exports to the benefit of Germany, Switzerland and France, which first became a net exporter. German exports regained their relative position of 1913 by 1928. From 1927 Germany surpassed the UK in the value of its total machinery exports, to rank second only to the US. Her exports of textile machinery continued to expand until they even surpassed those of Britain during the five years 1929–31, 1933 and 1936.(Table 2)

IV

The World Economic Depression, 1929–32, and the Establishment of Textile Machine Makers Ltd.

World exports of textile machinery sank by a massive 52 per cent in volume during 1929–32 and British exports, especially to Europe, sank by 50 per cent.(Table 1) The export bias of the British industry increased sharply with the total collapse of domestic demand. Platts' sales reached a secondary peak during October 1929 but its production of spindles declined by 69 per cent during 1930 (Table 3) while its profits sank by 53 per cent. Under the leadership of Platts, six of the largest manufacturers in Lancashire decided to amalgamate in the first effective combine in the history of the industry. Such a project had been mooted on at least four earlier occasions, in 1898, in 1904, in 1921–22 and in 1929. Only in 1931 were the conditions right for such a venture to succeed as the world's stock of spindles and looms ceased to expand any further. British exports had declined during 1930 by 26 per cent in value and by 28 per cent in volume, (Tables 1 and 2) with Japan, India and Europe together accounting for 76 per cent of the total loss in export tonnage. As enquiries and orders declined sharply employment in the industry shrank by one-third during 1930. The prospects for 1931 looked even bleaker as exports for the first four months declined by 51 per cent in comparison to the first four months of 1930. During 1929 five firms had made aggregate profits of £198,879, or a return of 3.7 per cent upon their capital: during 1930 the same firms suffered aggregate losses of £44,030, or of 0.82 per cent. Only two of the six firms paid an ordinary dividend for the year 1929–30 and only one firm for the year 1930–31.

Textile Machinery Makers Ltd. was registered in 1931 and was inevitably dominated by its two founders, Platts and Howard & Bullough.[24] Platts supplied the combine with a head office and secretariat, while Sir George Bullough (1870–1939) became the first chairman. The immediate challenge faced by the new combine was the existence of surplus capacity, amounting to two-thirds of existing plant.[25] The strategy adopted by Textile Machinery Makers was twofold, to eliminate surplus capacity and to maintain prices, both within Britain and abroad. The directors decided to close down four works and to concentrate production at those remaining, so reducing their labour-force. They also sought to acquire control over their remaining competitors and achieved that end in stages between 1933 and 1938. Platts bought a controlling share in Tweedale & Smalley in 1933[26] and reached a working agreement with the Rochdale firm: three directors from Textile Machinery Makers were elected to the board of Tweedales, markets were amicably divided and a good working relationship was established. Platts next acquired control of Taylor, Lang & Co. Ltd. of Stalybridge in 1936, so eliminating its second most dangerous competitor. Between 1933 and 1936 Textile Machinery Makers Ltd. established itself as the undisputed price leader within the industry. The capital of member firms was drastically reduced by 81 per cent to £2.2 million in two stages, in 1931 and 1935, a reduction broadly comparable to that undertaken by the spinning firms in the American sector of the Lancashire cotton industry between 1926 and 1938.[27] Steps were taken from 1937 to unify the design of machines, especially of the ring frames made by Platts and by Howard & Bullough. No success was however achieved in diversifying operations or in initiating new research. Exclusion from membership of the British Cotton Industry Research Association based at the Shirley Institute reflected a belief that the interests of the textile machine-makers had become almost wholly linked with the export market and divorced from those of the Lancashire cotton industry.

The performance of the member firms varied greatly and may best be measured in the financial sphere, by their dividends or preferably by their profits.(Tables 4 and 5) Of the six firms only one was in first-class condition while two were in dire straits and three were in a middling fair condition. Platts had enjoyed its golden age during the boom of 1830–80, achieving an average annual profit-ratio of 18 per cent (1834–83), with a peak of 25 per cent in 1876–77.[28] It quintupled its capital between 1869 and 1909 to £4.8 millions and distributed average annual ordinary dividends of 14 per cent (1869–1926). It had however reached its peak export of spindles in 1896 (Table 3) and had been surpassed by Howard & Bullough in its production of ring frames as well as in its profit-ratio. By the 1920s its profit-ratio had sunk below the average level achieved by other leading firms.(Table 4) From 1928 it entered upon the most depressed decade in its history, passing ordinary dividends from 1928 and preference dividends from 1932. In 1930 it was compelled to recruit a chairman from outside the ranks of the firm in a bid to restore its financial health.

Brooks & Doxey had enjoyed a full generation of expansion (1859–92) but had suffered heavily from the competition of other firms in the manufacture of its staple line of ring frames. It paid no dividends for 23 of the 30 years 1901–31, built up no reserves and had to issue debentures in 1898 equal to half of its authorised capital. It was not redeemed by reconstruction in 1920 and suffered five years of losses from 1925.(Table 4) Hetheringtons resembled Brooks & Doxey in so far as it manufactured machine tools as well as textile machinery: both firms may well have suffered from American competition in the market for new machine tools. Hetheringtons had also ceased to generate profits in the 1890s and had undergone four reconstructions between 1890 and 1906 but still paid no dividends for 22 years between 1897 and 1918. Then it regained financial health through the manufacture of artificial silk machinery in the 1920s and paid higher dividends than any other firm.

Dobson & Barlow had been adversely affected, as a specialist maker of the mule, especially for fine spinning, by the shift of demand in favour of the ring frame. It had diversified earlier than any other firm into the manufacture of rayon spinning machinery from 1901 and of viscose spinning plant from 1903. It still had to undergo two financial reconstructions, in 1907 and 1923, and paid an average annual dividend of 9 per cent over 23 years (1907–29), passing its dividend only in 1915. Howard & Bullough of Accrington enjoyed a remarkable career of expansion and extended its operations from the manufacture of ring frames over the full range of spinning machinery. John Bullough (1838–91) was an entrepreneur comparable to John Platt and became the first millionaire produced by the industry, leaving an estate of £1.228 million. His firm was one of the very few to establish a transatlantic subsidiary, in Pawtucket, Rhode Island, in 1893 in order to manufacture the machines which it had patented in the US since 1883. It made use of loans in order to pay dividends averaging twice as much as its profit ratio of 5.6 per cent in 1893–1907[29] but maintained during the 1920s an above-average profit-ratio of 12.6 per cent.(Table 4)

Asa Lees remained the brightest star in the industry's financial firmament. It had the smallest capital of all six firms and had been free from debt since the 1880s. Not only was its profit-ratio in 1920–28 double the average but it ranked as the highest ratio of all during the years 1923–25. From its large reserves it created in 1925 a dividend equalisation fund. Asa Lees and Platts were the only firms to secure a larger share in Textile Machinery Makers Ltd. than their assets warranted, while Brooks & Doxey was the only firm to be denied a seat on the new board of directors. Tweedale & Smalley had been spawned by a secession from Howard & Bullough in 1891 and became almost as profitable an enterprise as Asa Lees. It repaid its capital in dividends during the five years 1921–26 and achieved a higher profit-ratio than any other firm in 1922 and again in 1926–28.(Table 4)

For the first three years Textile Machinery Makers operated at a loss. Not until 1934–35 did each of the six companies generate a profit. Not until 1937–38 did the four leading firms all pay dividends. Howard & Bullough, like Tweedale & Smalley, passed its dividend for only a single year. Asa Lees cautiously passed its dividend for three years, Dobson & Barlow for six. Platts, however, remained in a very serious plight, making average profits of only 0.8 per cent during the eight years down to 1938–39. It resumed payment of interest on both ordinary and preference shares only from March 1938. The greatest achievement of Textile Machinery Makers was to establish an international price cartel through successive agreements with the Swiss in 1934, with the French in 1935 and with the Germans and Americans in 1936, excluding only Italy and Japan. The combine was able to increase export prices by one-fifth during 1935 (Tables 1 and 2) and benefited by a reduction in the imports of textile machinery into Britain from the peak tonnage attained in 1936. The British share in the value of world trade in textile machines rose slightly between 1933–35 and 1936–38.(Table 2) The cartel's success remained dependent upon the continuing stagnation of world demand.

Outside the cartel Japan had become the most serious competitor of the British industry in 1938 when it surpassed even Germany in the volume of its exports of textile machinery. It had made the transition from net import to net export, achieved in 1931, faster than any other state. Japan required 12 years to develop its own power-loom (1885–97), 23 years to develop its own ring frame (1885–1908)[30] and 22 years to develop its own automatic loom (1904–26). Since 1913 its manufacturers had remained unique in their capacity to quote lower prices than British firms. They derived a great stimulus from the war of 1914–18 and increased the value of their exports to China between 1915 and 1930 some 50 per cent faster on average than those of Britain. Their competition reduced UK shipments to China from their peak level of 1930. During 1935 Japanese shipments to China first surpassed those of the UK, as its shipments of piece-goods to China had first surpassed those of the UK during 1917 and as its shipments of cotton yarn to the same market had surpassed those from Britain during 1910. In the value of its exports of textile machinery Japan surpassed in succession Switzerland in 1933, France in 1934 and Germany in 1938.(Table 2) Fortunately Japan, like Germany, diverted its industries into preparation for war.

In Britain rearmament contracts came to the aid of the combine, and profit-ratios trebled between 1937–39 and 1940–44.(Table 5) The average dividends paid by the six firms for the eight years down to

1938–9 were 2.25 per cent, which rose to 7 per cent during World War II. Textile Machinery Makers itself paid its first preference dividend for 1935 and its first ordinary dividend for 1938, averaging 5 per cent (1938–40), 6 per cent (1941–45) and 8 per cent (1946–52). Within the amalgamation the balance of power shifted in favour of Howard & Bullough and of Platts, which were receiving by 1941 90 per cent of all orders for new machinery. Outside its ranks the number of firms in the industry doubled from 348 in 1935 to 703 in 1949 in order to serve the needs of the accessory and jobbing trades: the establishment of the amalgamation does not seem to have blighted the prospects for new entrants.

V

The Achievements of the British Textile Engineering Industry in the Service of the World Market

During most of a long career the industry fulfilled effectively its primary function, the supply of cheap machinery to its customers. The economies of large-scale production for the world market kept the cost of plant in Lancashire at the lowest level in the world. The industry maintained closer links to the national economy than the cotton industry proper, as a manufacturer of capital goods and as an operator of machine tools capable of conversion to the production of munitions, such as occurred four times between the Crimean War and the 1939–45 war. The industry should not be blamed for any 'failure' by Lancashire to adopt the ring frame or the automatic loom since it could supply its clients only with what they wanted. It cannot fairly be criticised for Britain's loss of technical leadership since that loss was one indication, amongst others, of the decline of the British cotton industry, and could only have been avoided if a local demand had developed for a higher technology than the one in use.[31] Where such a demand arose abroad British engineers supplied the machines which had been devised originally in the US but were manufactured and often improved in Lancashire. Nor should the industry be blamed for failing to overcome the hostility of unions and employers to labour-saving machinery in the Lancashire of the 1930s. At that time labour was in surplus and employers fulfilled a social function in employing labour without paying any dividends to capital. What remains truly remarkable about the industry is not its loss of the world market but its relatively long period of domination of that market.

Textile engineering remained a very small industry in comparison to the immense capitals locked up in its client industries around the world. That smallness of size made its achievements all the more remarkable, but limited its influence and restricted its responsibilities. It could not carve out any niche in the market protected from the ravages of competition: it remained a servant of the market, with the British industry ranking as one amongst others. So small was the industry that its exports were omitted before 1900 from the trade statistics of the industrial states. Its contribution to world trade was indeed much greater in value than in volume since the average unit-price of exports of textile machinery in 1913 was about five times that of other exports. Thus, at its peak in 1913 the textile engineering industries of the world supplied only 0.085 per cent of the total volume of world exports but 0.5 per cent of their value. For its part the British industry had increased its contribution to exports until it reached the maximum proportion of 2.8 per cent of the total value of exports in 1896. The industry continued to expand its exports until they reached an absolute peak in 1908. Those exports generated on average two per cent of the total value of exports in 1904–13 but a quarter of the total volume of exports of machinery: they represented the equivalent of one quarter of the tonnage of the exports of cotton manufactures. At its zenith in 1907 the British industry generated only 0.7 per cent of the total value of industrial production and the equivalent of 7.5 per cent of the value of the cotton industry's product.

It must be admitted that the industry did reduce the level of replacement demand for its products by the manufacture of durable machines which were specially built to withstand the shocks of loading, unloading and transhipment. It was also responsible for the export of the mechanical sinews of industry, so engendering competition with Lancashire and thereby eroding the home market for its products. In so far as it helped to develop domestic cotton industries and to replace Lancashire cloth by a local product the industry inhibited the expansion of international trade and contributed to the reduction from the 1870s in the share of textiles entering into world trade. Nevertheless, its sheer efficiency frustrated successive attempts in many states to establish their own machine-making industries.

VI

The Final Triumph of Foreign Competition

In the immediate post-war period the industry enjoyed an Indian summer of prosperity due to the wartime defeat of its main competitors in Germany, Italy and Japan. The average profit-ratio of 38 per cent achieved during 1948 surpassed even the record 25 per cent of 1922. (Table 5) Dividends for the six firms averaged 11 per cent per annum for the nine years to 1953. Asa Lees paid a regular 24 per cent and wound up in 1953 with a triumphant return to its shareholders of five times their nominal capital. Outside Textile Machinery Makers, Tweedales ranked next to Asa Lees in performance, paying dividends which averaged 11 per cent (1932–39), 15 per cent (1940–44) and 21 per cent (1945–53).

The prosperity of the 1940s had however destroyed any incentive to prepare for the ordeal of intense competition in a world freed from the incubus of a price cartel. All the major innovations made in the cotton industry during the twentieth century were made outside Britain. No British invention attracted the interest of any foreign licensee. In 1946 Textile Machinery Makers was indeed forced under official pressure to establish a research section, to revise and enlarge its ideas about research and to establish close ties with the British Cotton Industry Research Association which had been created in 1919. In 1947 a separate company, Textile Machinery Makers (Research) Ltd., was formed, long before British Northrop began to follow that example in the 1960s. Expenditure on research remained however very low in comparison to such investment in rival states. Research failed to generate immediate results or to provide any protection against the loss of markets.

The slump of 1952 in the Lancashire cotton industry was followed by a slump in the exports of textile machinery in 1953 from the record heights of £50.5 millions attained during 1952. Britain began to face serious competition from Germany, Switzerland and Czechoslovakia as well as Japan. Competition was extended from weaving to spinning machinery as new levels of productivity were attained by foreign inventions: Platts did not market its own Rotospin high-speed spinning machine until 1971. The tonnage of British exports halved between 1953 and 1958. From 1957 Britain was surpassed by West Germany as an exporter of textile machinery and thereafter the Board of Trade discontinued the publication of statistics relating to textile machinery. Britain was next surpassed by Switzerland in 1969 and by Japan in 1973 and then by Italy and the US by 1979, so declining in 20 years from the position of first exporter in the world to that of sixth. The industry had become increasingly export-oriented as the Lancashire cotton industry declined. Its share of the world market had however shrunk from 27 per cent in 1955 to 7 per cent in 1979.

Platts remained able to maintain payment of dividends averaging 15 per cent (1953–66) and 11 per cent (1967–79). Unfortunately, the management failed either to reduce costs of production or to diversify operations as its share of the world market declined. Indeed it increased the firm's commitment to the manufacture of textile machinery between 1972 and 1975, so making it over-dependent upon exports in a shrinking market. At the same time Platts increased its interest-payments tenfold (1972–75) in order to finance the purchase in 1973 of the Saco-Lowell Corporation. As interest rates doubled between 1972 and 1979 the firm became the captive of its bankers, who declined in 1982 to extend any further credit. The acrimonious bankruptcy of Platts left its shareholders with nothing but the memory of their past dividends. Another firm, Mather & Platt, had successfully diversified its operations and survived.

Imports of textile machinery into Britain rose sharply in 1970–74 during the industry's last great boom. By 1971 imports supplied more than half of the home market, by 1981 74 per cent and by 1982 85 per cent.[32] From 1984 Britain became a net importer of 'textile and leather machinery', with 60 per cent of the imports flowing in from the EEC Thus ended the era initiated by 'the great inventions' of the eighteenth century. The cotton industry, reconstituted on the basis of the machine and the factory, had returned to its original home in Asia. India surpassed the US in spindleage in 1972 to become the leading cotton spinner in the world and was in turn surpassed by China in 1977. Both states became exporters of textile machinery, China by 1959 and India by 1967.[33] The large-scale export of textile machinery remained however pre-eminently the preserve of the industrial states of Europe and of Japan. For Europe if not for Britain textile engineering remained the residual heir of the textile manufacturing industry.

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29. LRO, DDPSL/3/32/1, Howard & Bullough Ltd., Balances, 1893–1907.
30. 'Textile Machinery Markets', *Textile Recorder* (Sept. 1908), p.142.
31. In May 1934 Sir Walter Preston (1875–1946), chairman of Platt Bros., who had visited Japan in 1932, publicly recommended the re-equipment by Lancashire with ring frames and automatic looms, in order to restore its competitive capacity in the manufacture of grey cloth. The suggestion evoked fierce opposition from the employers, but did serve to initiate a debate lasting until October 1936. In that debate it became clear that Preston's proposals entailed the total reconstruction of the local cotton industry, including the use of Indian cotton in place of American cotton, the replacement of male mule spinners by cheap female labour, the introduction of large-scale double-shift working, the large scale expansion of weaving in the spinning districts of South Lancashire and the introduction of direct marketing in order to eliminate the charges of Manchester merchants. In short Lancashire was to be remodelled along Japanese lines. The response of the employers was negative and pessimistic: they maintained that even if costs could be reduced, which they doubted, any such reduction would simply be met by a competitive lowering in Japanese costs. For his part Sir Walter confined himself to urging the Government to equip at the expense of the taxpayer a demonstration mill, 'so as to show the world that Lancashire can compete with Japan and make a handsome profit'. 'How to save Lancashire', *Manchester Guardian*, 23 Nov. 1935, p.15. Also see *Manchester Guardian Commercial*, 7 Feb. 1936, p.119; 5 June 1936, p.518. The soundness of Preston's advice was established by empirical research first undertaken during 1990, which showed conclusively that those firms which adopted the ring frame and the automatic loom survived for longer than those which clung to the mule and to the Lancashire loom.
32. R. Gill, 'The Performance of the Main Textile Machinery Producing Countries', *Textile Institute and Industry*, Vol.15 (April 1977), p.128; 'Import Penetration for 1982', *British Business*, Vol.11 No.13 (1–7 July 1983), 590.
33. Kayser Sung, 'The Development of Mainland China's Textile Industry with Special Reference to the Changing Pattern of its Foreign Trade', *Cotton and Allied Textile Industries*, Vol.16 (1975), p.54; *Kothari's Economic and Industrial Guide of India, 1978–79* (Madras, 1978), Textiles, p.25.

TABLE 1

VOLUME OF WORLD EXPORTS
OF TEXTILE MACHINERY
1913–1938 (tons of 2240 lbs.)

	1913	1922	1923	1924	1925	1926
Britain	178,074	154,396	138,658	103,618	123,107	101,541
Germany	94,800	25,720	44,477	45,039	53,552	56,400
USA	4,256	12,477	10,402	9,294	13,277	11,403
France	1,942	9,500	9,585	10,533	12,292	15,018
Switzerland	10,040	10,642	12,454	9,632	12,216	11,784
Japan	1,038	6,225	4,665	3,931	3,357	2,912
Others	5,339	7,144	10,015	9,370	9,055	14,477
TOTAL	295,489	226,104	230,256	191,417	226,856	213,535
	1927	1928	1929	1930	1931	1932
Britain	119,299	125,210	126,553	91,213	55,567	62,989
Germany	59,656	72,928	89,413	59,352	38,307	32,555
USA	12,081	14,199	15,013	9,475	8,078	6,551
France	19,110	17,498	16,093	10,403	8,283	11,214
Switzerland	14,341	18,845	19,563	13,210	8,973	7,209
Japan	3,238	3,374	4,606	5,152	9,153	6,434
Others	10,586	13,781	7,954	6,297	4,662	7,963
TOTAL	238,311	265,835	279,195	195,102	133,023	134,915
	1933	1934	1935	1936	1937	1938
Britain	56,414	78,486	67,115	53,190	72,265	70,985
Germany	32,385	35,552	35,380	44,543	46,980	36,750
USA	10,920	7,689	9,069	11,272	11,792	8,202
France	10,607	11,175	10,774	12,571	10,814	9,621
Switzerland	6,710	10,683	10,544	10,444	13,341	11,801
Japan	7,312	12,182	17,644	23,187	36,919	39,530
Others	8,039	8,393	11,464	11,255	11,851	9,691
TOTAL	132,387	164,160	161,990	166,462	203,962	186,580

TABLE 2

VALUE OF WORLD EXPORTS
OF TEXTILE MACHINERY,
1913–1938 (£000)

	1913	1922	1923	1924	1925	1926
Britain	8,282	21,449	15,734	10,831	12,157	9,957
Germany	5,178	3,554	5,010	5,304	6,553	7,249
USA	404	3,100	1,977	1,981	2,379	2,141
France	90	1,100	1,496	921	799	740
Switzerland	564	1,690	1,312	1,446	1,642	1,382
Japan	36	540	405	341	291	253
Others	292	525	574	416	721	972
TOTAL	14,846	31,958	26,508	21,240	24,542	22,694

	1927	1928	1929	1930	1931	1932
Britain	11,739	11,623	11,644	8,628	5,281	5,511
Germany	7,896	9,976	12,440	8,497	5,451	5,309
USA	2,359	2,642	2,867	1,781	1,519	1,232
France	1,095	1,005	1,007	788	643	728
Switzerland	1,653	2,202	2,336	1,603	1,142	1,166
Japan	281	293	347	391	567	293
Others	627	908	623	492	289	598
TOTAL	25,650	28,649	31,264	22,180	14,892	14,837

	1933	1934	1935	1936	1937	1938
Britain	5,178	6,672	6,914	5,959	8,111	8,427
Germany	5,235	6,031	6,314	6,774	7,358	5,610
USA	2,053	1,446	1,704	2,119	2,217	1,542
France	841	876	804	768	584	518
Switzerland	1,042	1,602	1,397	1,417	1,671	1,612
Japan	297	496	737	882	1,519	1,710
Others	480	530	812	690	741	596
TOTAL	15,126	17,653	18,682	18,609	22,201	20,015

Sources for Tables 1 and 2:

The Annual Statement of Trade, 1913–39, for Britain, the *Statistisches Jahrbuch*, 1913–39 for Germany, the *Foreign Commerce and Navigation of the United States*, 1915–38 and the *Annual Report of the Foreign Trade of Japan*, 1929–38, for access to which I am indebted to Professor Shin-ichi Yonekawa. These official statistics have been supplemented for France and Switzerland by those contained in [Engineering and Allied Employers National Federation] *British Engineering Industry*: *Realities and Problems*, (1930), pp. 47–8 for 1913 and 1924–29; and in *Engineering*, 24 Feb.1933, p.225 for 1930–32; ibid., 24 Feb. 1939, p.213 for 1933–38. The estimates for 'other countries' have been calculated from the ratios deducible from the *Bulletin du Bureau International de Statistique Commerciale* (Brussels, 1925–37, 14 vols. for 1922–35).

United States figures for 1912–13 and 1913–14 have been converted to an estimate for the calendar year 1913. Figures for the volume of US exports were

published only for the years 1922–28. They have been supplemented by using as a proxy for their unit-value the average unit-values of British imports of US textile machinery for 1933–37. The volume of Japanese exports for the years 1922–27 has been estimated on the basis of the unit-value for 1928.
I am deeply indebted to Dr Heita Kawakatsu of Waseda University for supplying an extensive statistical table of the imports and exports of textile machinery into and from Japan, 1883–1933. This table is the more valuable because Japan was the first state to record such an item in its trade statistics, anticipating the UK by ten years.

TABLE 3

SPINDLEAGE OF SELF-ACTOR MULES AND RING FRAMES MANUFACTURED BY PLATT BROS., 1880–1939

	Mule Spindles			Ring Spindles		
Annual Average	Home	Export	Total	Home	Export	Total
1880–84	618,020	308,748	926,768	10,730	76,846	87,576
1885–89	379,984	354,825	734,809	39,206	189,752	228,958
1890–94	474,957	342,874	817,831	24,279	284,917	309,196
1895–99	305,548	334,725	640,273	24,369	427,431	451,800
1900–1904	616,726	222,304	839,030	28,390	217,496	245,887
1905–09	987,372	193,567	1,180,939	116,305	417,942	534,247
1910–14	618,973	145,118	764,090	86,594	333,446	420,040
1915–19	120,575	16,061	136,636	75,358	193,490	268,847
1920–24	132,162	10,493	142,654	44,642	230,143	274,785
1925–29	158,965	33,095	192,060	41,467	356,260	397,727
1930–34	427	1,509	1,936	4,675	170,833	175,508
1935–39	316	–	316	28,128	163,727	191,855
Annual Total						
1929	19,216	17,288	36,504	3,088	630,612	633,700
1930	1,936	4,792	6,728	134	197,888	198,022
1931	–	–	–	–	270,552	270,552
1932	200	–	200	192	126,876	127,068
1933	–	2,752	2,752	1,448	169,728	171,176
1934	–	–	–	21,600	89,122	110,722
1935	–	–	–	16,440	212,462	228,902
1936	1,578	–	1,578	22,676	62,976	85,652
1937	–	–	–	35,400	309,056	344,456
1938	–	–	–	8,860	142,972	151,832
1939	–	–	–	57,266	91,168	148,434

Sources: D.A. Farnie, 'Platt Bros. & Co. Ltd. of Oldham, Machine-Makers to Lancashire and to the World: An Index of Production of Cotton Spinning Spindles, 1880–1914', *Business History*, Vol.23 No.1 (1981), pp.84–86; Lancashire Record Office, DDPSL 1/25/4–11 and 45 for mules, 1880–84 and 1930–41; 1/1/20 for mules, 1885–1930; 1/42/4–22 and 24–25 for ring frames, 1880–1934 and 1/57/12–14 for ring frames, 1935–1939.

The annual averages have been calculated from aggregates derived from some 17,680 separate orders recorded in the 34 order books listed above. These orders were ranked according to their date of reception and not according to the date of delivery. They relate only to cotton spinning spindles and therefore exclude all machines other than spinning machines (ie. doubling, winding, reeling, twisting, twining and tubing machines). They exclude waste spinning machines and any machines using non-cotton fibres such as wool, silk or asbestos. They exclude jobbing orders, orders for 'extras' such as spindles and all conversions where no new spindles were added. They are limited to orders for industrial use and therefore exclude orders for display in exhibitions or for use in technical schools. Orders for ring frames reached their peak in 1905 and orders for mules their peak in 1906. The annual figures for 1929–39 in the second part of the table reveal the dramatic shift in demand from mules to ring frames. The last cotton mules were ordered in 1936, whereafter mules were ordered from Platts only for other purposes or for other fibres.

TABLE 4

PROFIT RATIOS OF SEVEN PRINCIPAL FIRMS, 1920–1928

Calendar Year	Platt Bros.	Howard & Bullough	Brooks & Doxey	Dobson & Barlow	J.H. Hetherington	Tweedale & Smalley	Asa Lees	Arithmetic Mean	Weighted Average
1920	18.4	7.6	15.6	10.3	18.8	12.6	16.6	14.3	15.15
1921	26.4	19.7	11.9	25.7	20.9	17.1	29.1	21.5	23.01
1922	15.9	34.3	13.5	19.0	28.8	67.8	62.0	34.5	24.73
1923	9.1	19.7	2.9	5.4	15.3	34.7	53.3	20.1	15.08
1924	4.9	9.1	1.5	11.9	4.7	10.7	23.7	9.5	7.56
1925	5.0	8.8	−1.7	12.3	2.7	10.6	12.4	7.2	6.60
1926	5.0	4.6	−4.8	8.8	2.8	13.3	7.4	5.3	5.20
1927	1.9	4.7	−3.3	6.4	5.3	14.0	5.8	5.0	3.76
1928	1.6	4.7	−0.2	6.2	7.5	13.3	2.1	5.0	3.97
Arithmetic Mean	9.80	12.58	3.94	11.78	11.86	21.57	23.60	13.59	

Sources: A Riley, 'The History of Technical Developments in the Cotton Spinning Section of the Textile Engineering Industry of Lancashire since 1800' (unpublished M.A. thesis, University, of Manchester, 1933) p.136, Table No.13 for annual profits 1920–31; *Textile Mercury*, 31 Dec. 1921, p.9; 30 Dec. 1922, p.10; 19 Jan. 1924, p.19; 31 Jan. 1925, p.13; 30 Jan. 1926, p.10; 29 Jan. 1927, p.26, Annual Trade Reviews for 1921–26; *Stock Exchange Year-Book*, 1920–30, for capital and dividends.

In order to facilitate comparison all profits have been recalculated in terms of calendar years from the different financial years used by the firms. Profits are net of capital consumption charges, depreciation, directors' fees, and interest on debentures and preference shares. The weighted average in the final column represents the ratio of total profits to total capital.

TABLE 5

PROFIT RATIOS OF THE SIX MEMBER-FIRMS of TEXTILE MACHINERY MAKERS LTD., 1937–1948

Calendar Year	Platt Bros.	Howard & Bullough	Brooks & Doxey	Dobson & Barlow	J.H. Heth-erington	Asa Lees	Arithmetic Mean	Weighted Average
1937	2.0	7.1	0.6	6.6	0.7	11.2	4.6	3.04
1939	5.4	1.6	2.3	28.0	0.1	6.1	7.2	4.06
1940	5.1	4.3	6.8	51.7	0.2	23.0	15.2	5.72
1941	7.5	6.7	4.2	109.0	0.3	41.3	28.2	8.83
1942	7.2	12.2	7.6					
				58.3	31.2	10.45		
1943	6.4	10.0	6.5	68.4	0.4	76.6	28.0	8.76
1944	4.2	12.7	2.9	60.5	0.4	65.6	24.4	7.82
1945	−1.7	5.6	−5.0	−18.0	0.4	40.4	3.6	0.23
1946	−9.1	2.1	−15.6	−240.6	1.8	−44.1	−50.9	−11.52
1947	−1.0	40.0	1.0	−41.4	3.9	−3.1	−0.1	10.72
1948	32.9	57.7	17.5	114.0	5.8	2.0	38.3	38.2
Arithmetic Mean	5.36	14.56	2.63	21.80	1.29	25.20	11.8	

Sources: Lancashire Record Office, DDPSL/13/1/3–6, Textile Machinery Makers Ltd., Directors' Minutes, Vols. 3–6 (1937–48). Accounts for the years 1937–40 were made up to 30 September but from 1941 were compiled by calendar year. Balances for the calendar year 1948 have been estimated on the basis of those for the first nine months.

THE DECLINE AND RISE OF TEXTILE MERCHANTING, 1880–1990

By STANLEY CHAPMAN

In the later Victorian years the British textile industry was dominated by merchants. In two generations of rapid growth, from the 1820s to the 1880s, they had become the undisputed kings of the textile business. After all that has been written about the Industrial Revolution in cotton, and in textiles generally, it may seem almost reactionary to assert that merchants rather than manufacturers ruled Britain's premier industry. The idea certainly requires some explanation.

The economic power of the merchant class in this industry was the consequence of three factors. The disintegrated structure of the textile industry is well known. The British industry traditionally consisted of a large number of small (or small-to-middling) family firms with limited capital all making similar goods in conditions approaching the economist's definition of perfect competition. Sporadic attempts to launch or forge integrated production (whether vertical or horizontal) made little impact on the overall scene before 1914,[1] and on hosiery and knitwear before the 1960s. As a result, power was retained by the entrepreneurs controlling credit and marketing – the commission merchants.

The City of London textile market retained its leadership despite the rise of important trading centres in Manchester, Liverpool, Leeds, Bradford and Glasgow. Notwithstanding strong growth of financial specialisms in the City, merchanting continued to be more important until at least 1914, and within this sector textiles were much the most important single element.[2] When the process of integration of family firms began at the end of last century, all the well known groupings (J. & P. Coats, Fine Spinners & Doublers, the Calico Printers Association (CPA), Tootal Broadhurst Lee and others) were horizontal combinations. All the home trade and shipping (export) houses remained independent.[3]

I

Evidence of Merchant Domination

Merchant domination is not immediately obvious from the extensive literature because practically all the numerous writers on nineteenth- and early twentieth-century textiles were primarily interested in production rather than trade and were based in the north of England rather than London. They regularly identified the fragmentation of the production

TABLE 1

CAPITAL OF LEADING TEXTILE WAREHOUSEMEN c.1880

	Year	£m	Factories
LONDON			
Cooke, Son & Co.	*c*1880	*c*2.0	1
I. & R. Morley	*c*1880	*c*1.4	7
Dent, Allcroft & Co.	1886	0.69	1
Copestake, Crampton & Co.	1880	0.65	1
Leaf, Sons & Co.	1879	0.5	
Fore Street Warehouse Co. Ltd.	1880	0.42	
Bradbury Greatorex & Co.	1894	0.4	
J. & C. Boyd	1890	0.39	
Pawsons & Co.	1880	0.31	
George Brettle & Co.	1882	0.25	1
Foster, Porter & Co.	1881	0.21	
Ward, Sturt & Sharp	1878	0.2	
Caldecott, Sons & Co.	1881	0.2	
Crocker, Sons & Co.	1881	0.15	
Devas, Routledge & Co.	1878	0.14	
London Warehouse Co. Ltd.	1874	0.11	
Dewar, Sons & Co. Ltd.	1876	0.10	
Baggalays & Spence	1881	0.10	
David Evans & Co.	1883	0.05	1
Welch, Margetson & Co.		n.a.	2
PROVINCES			
John Rylands & Son, Manchester	1876	1.3	15
A. & S. Henry, Manchester	1889	1.1	3
Arthur & Co., Glasgow	1878	1.0	3
Thomas Adams & Co., Nott'm	1877	0.13	1

Sources: Incorporated companies in Seyd & Co.'s London Commercial List (1877), copy in West Yorks R.O. C149/958; N.B. Harte, *A History of George Brettle & Co.* (1977), p.103; John Rylands Mss., John Rylands University Library, Manchester; A. & S. Henry Ltd. Ulster Record Office, Belfast, T1346/1; J.F. Barclay, *The Story of Arthur & Co.* (Glasgow, 1953), p.50; D.J. Jeremy (ed.), *Dictionary of Business Biography* (1984), Vol I, article on J.D. Allcroft.
Partnership capital in Bank of England R.O., Discount Applications C29/23.
Capital of Cooke, Son & Co. and I. & R. Morley has been estimated from data on Cooke's sales and capital for 1920–40 (Courtaulds' Archives, Coventry) and Morleys' sales 1830–1926 (Lord Hollendon's Estate Office, Tonbridge, Kent).

process, but scarcely anyone paused to consider finance and marketing. There are several biographies and a couple of histories of London textile merchant houses (more than of other centres) but they disclose little of how the system worked.[4]

Consequently most of the hard evidence must come from analysis of financial data. Table 1 assembles details of the capital of leading

TABLE 2

AVERAGE SIZE OF INVESTMENT IN BRITISH COTTON MILLS (MACHINERY ONLY) *c.*1880

	1878	*c.*1880	
Spinning mills (1,159)			
Average spindles per mill	24,738	× 24s. (£1.2)	= £29,685
Weaving mills (765)			
Average looms per mill	307	× £24	= £7,368
Combined mills (597)			
Spindles/mill	26,022	× 24s. (£1.2)	= £31,226
Looms/mill	469	× £24	= £11,256
Total investment, combined mills			£42,482

Sources: C.H. Lee, 'The Cotton Textile Industry' in R. Church (ed.), *The Dynamics of Victorian Business* (1980), Table 8.2, p.173 (for calculations of average spindles and looms per mill). T. Ellison, *The Cotton Trade of Great Britain* (1886), p.70 for value of machinery. Many firms rented space and steam power but if they owned both it may be supposed that an average fixed capital investment would be in the order of £35,000 for a spinning mill, £10,000 for a weaving mill, and £50,000 for a combined mill. However the relative weakness of the manufacturer *vis-à-vis* the merchant lay in shortage of working capital; S.D. Chapman, 'Financial Restraints on the Growth of Firms in the Cotton Industry', *Economic History Review*, 2nd series, Vol.XXXII (1979).

merchants at the apogée of their power about 1880. At this date, as Table 2 suggests, there is nothing in manufacturing comparable in capital to the leading merchants and when the great combines of Tootals, the CPA and J. & P. Coats were assembled at the end of the century, it took some years for them to exploit their potential in marketing. In hosiery there was nothing on this scale until Wolsey was formed in 1920.[5] Indeed, the biggest City and Manchester merchant houses compared in size with all but the biggest of the merchant banks, which have been recognised as the most powerful group in City finance. This is confirmed by Rubinstein's tabulations of millionaires and half-millionaires, which contain scarcely any textile manufacturers but numerous merchants, especially in London.[6]

In a few instances we can focus instructively on particular merchant houses. I. & R. Morleys' sales at the end of last century was about 10 per cent of British production of hosiery and knitwear, and its capital was something like 15 times that of the largest producer of knitted goods, N.M.C.[7] Morleys' was not the biggest City textile warehouse (that was undoubtedly Cookes) but comparison with John Rylands (Manchester's biggest merchant) shows the former were as large as and more effective in their operations (Table 3).

However, perhaps the most convincing evidence of the central role of the merchant is found in an account of the credit system. The leader of

TABLE 3

MARKETING ORGANISATION OF RYLANDS AND
I. & R. MORLEY COMPARED, 1897–1900

	Morleys 1900	Rylands 1897
Warehouse staff	1,241	1,200
Travellers	77	70
Customers	9,000	20,000
Annual Sales	£3.06m.	£3.0m.+
Average annual sales per customer	£333	£150+

Sources: F.M. Thomas, *I. & R Morley* (1900), pp.22, 76, 85, 100; I. & R. Morley, London Sales, 1830–1926 (Ms., Lord Hollenden); D.A. Farnie, 'John Rylands of Manchester', *Bulletin of the Rylands Library*, Vol.LVI (1973), pp.106, 112.

the London textile trade for many years was James Morrison, who made his fortune at the cheap end of the market, buying at bankrupt prices and keeping costs low and turnover high by selling cheap to country drapers without employing travellers.[8] There appears to be no explicit record in the British literature of the mature system, and no relevant business archives, but the biography of a New York merchant who learned his business in England appears to give substance to the sketchy material published on this side. This commission merchant advanced 50 per cent of the fair selling price of the goods to the manufacturer, charging interest at 6 per cent per annum, while commission on sales averaged 5 per cent. He sold to a multitude of small retailers, invoicing at 30, 90 or 120 days. The merchant had no doubt of the advantages of the system to his suppliers, his customers, and himself:

> Altogether, assuming that advances did not run for more than four months, the entire selling cost, including interest and expenses, did not exceed 10 per cent of the selling price, and in many cases was much less. In return, the mill was assured continuity of operation, ample working capital with which to purchase materials and pay its labour, and freedom from credit risk. On the other hand it was a safe and profitable business for the commission merchant, providing he exercised sound judgement and possessed an intimate knowledge of goods and credits.[9]

Of course, the merchants' suppliers and customers did not always see the system in such a favourable light. Dependent manufacturers spoke of the 'merchant's yoke' and being 'downtrodden', while the connection between the merchant and retailers was compared to the tied house system established by the brewers in the period. Heylin's *Buyers and Sellers in the Cotton Trade* (1913) maintained that 'It has not been uncommon for spinners to find that cloth agents or merchants, in addition to holding unsold stock of manufacturers, have had a lien on the manufacturer's business and practically controlled it'.[10]

II

Merchants' Problems

During the last two decades of the nineteenth century, serious problems appeared in the system. Growing international and domestic competition arrested the dramatic growth of earlier years and put pressure on profit margins.[11] Intense competition induced merchant houses to offer longer credits and put more and more travellers on the road.[12] This 'reckless' policy brought many new and old firms to grief in the 1880s, while some of the most eminent houses (like Morrisons and Leafs) struggled for survival. Several second and third generation leaders found it necessary to incorporate their family businesses, but limited liability was still widely distrusted in the City and dynasties were thought inherently superior to meritocracy in retaining the loyalty of customers, suppliers and workpeople. Indeed, the two most successful City textile houses, Cookes and Morleys, remained family enterprises until after World War I.[13]

These problems were exacerbated as manufacturers and major retailers began to forge direct links. There had always been connections at the fashion end of the market, but they seem to have multiplied rapidly in the 1870s and 1880s. In the late 1880s the shareholders of Morrisons (now the Fore Street Warehouse Co. Ltd.) were told 'Things are much changed now, those great retail houses go to the manufacturers and are larger purchasers than ever wholesale houses can be of certain specialities'. Walter Leaf, whose City house specialised in fancy goods, said that the big retailers had already 'seriously damaged' the wholesale trade by 1874. Towards the end of the century the traditional piece goods trade with the drapers declined in favour of the ready made garment trade, where the great retailers had the advantage of the wholesalers.[14] By the mid-1890s the leading London stores were already rivalling most of the wholesalers in capital assets (Table 4).

The history of Debenhams relates that Frank Debenham, the driving force of the firm from the 1860s to the 1890s, was always 'determined to buy at source' and before 1870 was buying silks at Lyons, St. Etienne and other places in France and Italy. When woollen underwear began to be made in hosiery factories, Debenhams bought direct from manufacturers in Leicester and Nottingham, and also ready-made clothes from manufacturers. It is not known how many other West End and provincial drapers followed this lead, but according to Walter Leaf, major retailers were able to go direct to the manufacturer and buy from him on as good terms as any wholesale houses; some of them grew large enough to compete with the wholesale houses in their own line.[15]

TABLE 4

CAPITAL OF SOME LEADING LONDON RETAILERS, 1895–96

	Shares	Debentures	Total (£m)
John Barker & Co.	0.28	0.15	0.43
Thos. Wallis & Co.	0.30	0.12	0.42
Harrods	0.28	0.10	0.38
D.H. Evans & Co.	0.20	0.06	0.27
Liberty & Co.	0.20	–	0.20

Source: *The Statist*, Vol.XXXVII (1896–1), p.332.

According to *the Statist* in 1897:

> The wholesale drapery trade is now a lean trade, with a tendency to become leaner as the big retail houses deal more and more directly with the manufacturers or their agents; and the little shopkeepers, finding it hard to earn a living at all in competition with the great 'store' shops, want more and more concessions from the warehouses in the way of making up small parcels, such as quarter dozens, one-sixth dozens, and perhaps now and then one-twelfth dozens, until it is hard to distinguish so-called wholesale from retail trade. In these circumstances it is not surprising that some wholesale houses do not feel bound to inquire very closely whether a ready-money customer is or is not in the trade, whilst some large retail houses carry on also a considerable business in supplying smaller shopkeepers.[16]

Various solutions were found to prolong the lives of the home trade houses. Samuel Morley's success seems to have stemmed from his financial control. 'He knew how to turn the capital of the firm to the best account, never keeping larger balances than were absolutely needful lying idle, and taking advantage of every favourable change in the money market to gain his discounts', his biographer wrote. ('Discounts' evidently refers to buying not selling).

The accounts of the public companies show that they were already tightening credit in the 1880s. The clearest comments on this process come from Reuben Spencer of Rylands, writing in 1889. At that time some 40,000 commercial travellers were competing for the business of some 50,000 drapers, who were frequently tempted to overstrain their credit. He urged that a retailer should never allow his liabilities to trade creditors to exceed 2 to 2.5 times his capital, and that he should do a cash business. Spencer's book seems to have been very popular.[17]

The only way for the manufacturer to break out of the system was to establish his own brand with consumers, which gave him the opportunity to increase his profit margin and establish his own marketing organisation. Before the end of the century several firms were establishing their names with the public, including Horrocks of Preston, Hollins (Viyella Shirts), Wolsey (underwear), Cartwright & Warner of Loughborough (hosiery), Lyle & Scott of Hawick (underwear) and so on. Most appear to have opened their own warehouses in London or Manchester, or both.[18] However, it would be a mistake to suppose that the trade in branded goods was completely lost to the established wholesale houses. Their catalogues show them advertising a limited number of branded lines, while in press advertisements the branded goods manufacturers were often at pains to stress that they only sold through particular warehouses. Specific evidence is hard to come by, but Hollins' accounts show that in 1914 only one-eighth of its sales were made direct to retail. In other words, manufacturers' brands were not a strong challenge to the established merchants before 1914.[19]

Several of the great warehousing firms were also manufacturers, though it is not to be assumed that this was always a response to constraints on mercantile enterprise. Rylands and Morleys for instance, were manufacturers before they were merchants, and always maintained a strong presence at the factory stage of enterprise.[20] However there were other firms that entered manufacturing later, for instance Cookes (at Chatham), Welch Margetson & Co. (a Londonderry shirt factory), and even the small David Evans & Co. had a silk printing works at Crayford.[21] But there were problems of integration, even for I. & R. Morley, according to some reminiscences of the firm:

> It was only on rare occasions that any of the Fletcher Gate [Nottingham] managers met the Wood Street [London] buyers. Samples were sent up to London and stock orders were given . . . but it was left very largely to the Fletcher Gate managers to decide the quantities to be made in the various lines.

Another anticipation of major future developments was merchant investment in overseas production, for instance Rylands in the Dacca Twist Co. (India) and Morleys in Continental centres of glove making.[22]

The 'home trade' houses sought overseas outlets from their earliest years. Todd, Morrison & Co., the pioneers of the system, had travellers on the Continent at the end of the French Wars, but were frustrated by the inadequacy of British textile designers. Similarly the energies of George Moore (Copestake, Moore & Co.) led him to open warehouses in Dublin and Paris in 1846.[23] But the main development came later, with the concentration on the imperial market. I. & R. Morley, Leafs, Bradbury Greatorex and Welch Margetson opened a string of offices in the white colonies. Reuben Spencer of Rylands wrote that 'It is notorious that the colonial trade is the backbone of the Glasgow home trade houses' and believed that Manchester had been slow to respond to the opportunities beckoning there.[24] This shift in policy can be closely chronicled at Morleys because of Samuel Morley's prominent public profile (he was a leading Liberal MP and friend of Gladstone). So late as 1881, Morley was opposing the formation of a London Chamber of Commerce to press for protectionism at home and in the imperial market, but when the Chamber was launched a few months later he became Chairman of the Council.[25] At the turn of the century nearly a quarter of Morleys' travellers were employed overseas.[26]

It would be a mistake to see this search for overseas markets as simply the consequence of saturation of the home market and the nationalism of the age. As a result of the Franco-Prussian War, the City strengthened its position as the international centre of both finance and trade, not least the textile trade. The official biographer of Sir George Williams, the head of Hitchcock, Williams & Co. from 1863 to 1906, explained the commercial consequences of the War to the City:

> It was largely owing to the sudden cessation . . . of supplies from the two great Continental countries that Britain held her position for so long as the one great market place of the world. For years Continental competition in the colonies and in America was crushed, while the British retail draper, who in some cases had begun to buy direct from the Continent . . . was forced to fall back on the home wholesale houses . . . The trade of the civilised globe passed of necessity through British hands . . . These were the golden years of English commerce.[27]

Similar entrepreneurial opportunism is evident in Manchester, where Rylands led an assault on the Continental market in the 1870s.

The Wholesale Textile Association (WTA) was formed in London in 1912 to resist the encroachments of the manufacturers and major retail houses.[28] It was always a very secretive organisation and not much is known about its activities. Its main offensive activity consisted, it seems, in blacklisting manufacturers who contracted directly with retailers. Its leading light for many years was the head of I. & R. Morley, Lord Hollenden. The pressure of the WTA is evident in the advertisements of branded goods manufacturers, in which they insisted that they sold only through the wholesalers; in reality many of them were simultaneously involved in subterfuges to sell direct to the chain stores.[29] As late as 1953, the WTA was advertising in the *Draper's Record* that 'The Wholesaler ensures that only the cream of the world's production is presented to the retail trade. He enables the Shopkeeper to examine the products of hundreds of manufacturers under one roof . . .'.[30] By such pressures, the old merchant houses were able to resist the tide of change for a couple of generations. It was not until the period of mergers and takeovers of the 1960s that the last of the old firms were incorporated into vertical combines.

III

Inter-War Transition

The stiff competition from the major retailers did not lead to any sudden capitulation in Wood Street; indeed there was extensive rebuilding of warehouses around 1900. In the early 1920s the immediate threat to the vertically integrated warehousing firms (Morleys, Rylands, and the rest) appeared to come from the inadequacy of their manufacturing operations, for German-Jewish importers were able to import hosiery from the Continent in new fashion varieties (notably of stockings and fleecy-lined knickers) not made in Britain. The largest of these importers, Sterns, had annual sales of close on £3m in the middle 1920s.[31] For the three years 1924–26, I. & R. Morleys' sales averaged £3.2m a year and Cooks £5.1m, so Sterns was running the leaders very close. Morleys' sales were at much the same level as they had been in the years immediately before the War; apparently they had reached a plateau.[32] However the greatest threat to the warehousemen was still largely concealed from them; it came from other importers who acted as middlemen for the sale of womens' mass-produced clothing, dealing with Britain's most efficient and fast growing retailer, Marks & Spencer.[33]

The two attractively written histories of M & S may not appear to leave much more to be said, especially since the company's archives are so thin.[34] However in the context of the present research, a number of points need to be underlined or elaborated. The earliest clear records relating to purchasing policy refer to 1918, when M & S's textile buyer was already dealing direct with a number of manufacturers, mainly of fabrics in Manchester, but also of yarns in Bradford, tapes in Matlock, and socks in Leicester. The latter is particularly interesting in view of the much repeated story about the traditional textile industry being fractured by the 1926 links between M & S and Corahs of Leicester. There can be no question that Corahs became the retailer's major source of hosiery, but in 1918 it was already buying men's and women's socks from Faire Bros. of Leicester, one of the town's biggest manufacturers. It seems likely that this connection was severed soon afterwards, for between the wars all M & S's fully-fashioned stockings came from Germany then (after 1933) from Czechoslovakia. The substantial point is that in this matter, as in so many other changes in the textile industry and trade, innovation was a more gradual process than popular history or oral testimony allow. Indeed Harry Sacher, the original (and unpublished) historian of M & S, stresses that at the time of the link with Corahs, neither party was able to fully anticipate the implications and possibilities of the connection, and it was only in the 1930s that it was worked out.

As Sacher recalled it, M & S had to rethink its relationship with its suppliers after World War I when, as a result of inflation and Simon Marks' tour of America, it was decide to move 'up-market' from the penny bazaar to a 5s. ($1) ceiling. The warehouses M & S had been accustomed to deal with could not meet the new aspirations while the whole custom and prejudice of the trade was against direct dealing between manufacturer and retailer. Sacher maintains this was widely formalised into restrictive practices:

> In most industries the manufacturers were grouped in organisations which had special arrangements with the warehousemen, under which they undertook not to supply the retail trade directly but only throught the warehouses. That obstruction had to be broken through before even a commencement could be made . . . The small draper tended to look to the warehouse for credit and often something like a tied house development, with the warehouse in a position to dictate.

The earliest solution was found by reaching a sort of mutual accommodation in which M & S limited the range of its requirements and sent in regular standardised orders in return for price concessions.

In the longer period M & S did not so much break through the obstruction as neatly side-step it by moving into an area in which there was no established warehouse system, that of women's light clothing. A handful of 'top of the market' firms like Wolsey and Viyella were beginning to manufacture and advertise ready-made underwear and dresses before 1914, but the light clothing industry did not spread rapidly until the 1920s. Dewhirsts of Leeds, which as a wholesaler was M & S's oldest business contact, integrated backward into clothing manufacture, opening a sequence of factories. For other lines M & S turned to new firms that were hungry for orders and not yet moulded to the warehouse system: firms like H.L. Beales (Marathon Knitwear), the Nottingam underwear manufacturers, and Pasolds of Langley, which in the 1920s was manufacturing women's fleecy knickers for a City middleman called Da Costa and in the 1930s managed to supply direct. In a word, the warehouse system did not so much suffer a direct assault from M & S as a gradual attrition as the old style drapers lost ground to the variety chain and departmental stores.[35] It could be said that one kind of merchant was replaced by another, while manufacturers largely continued subservient to one or the other.

The decline of the old-style textile merchants can be illustrated from the experience of Cook, Son & Co., which remained the largest City house. Capital fell from £3.25m in 1920, when the third generation converted to a public company, to £1.83m in 1930. Sales tumbled from a peak of £8.79m in 1920 to just over £3.0m in 1938 (Table 5). The firm's historian wrote that as the co-ops and chain stores set up their own wholesale organisations in the 1920s, Cooks lost one of its large customers every week. 'This situation pushed the old wholesale general houses either into the control of manufacture [buying factories] and the consolidation of their own branded lines, or like Cooks, into opening accounts with a multitude of smaller and many less-sound concerns'.[36]

TABLE 5

THE DECLINE OF COOK, SON & CO., 1920–40 (£m)

Year ending 31 December	Issued capital	Sales	Stock
1920	3.25	8.79	1.89
1921	3.25	6.11	0.94
1922	3.25	5.78	0.91
1923	2.97	5.28	0.86
1924	2.97	5.38	0.84
1925	2.97	5.11	0.83
1926	2.97	4.72	0.72
1927	2.97	4.67	0.61
1928	2.97	4.42	0.59
1929	2.97	4.32	0.51
1930	1.83	3.98	0.42
1931	1.83	3.72	0.45
1932	1.83	3.27	0.38
1934	1.83	3.37	0.34
1936	1.83	3.38	0.35
1937	1.83	3.34	0.35
1938	1.83	3.04	0.32
1939	1.83	3.27	0.37
1940	1.83	3.40	0.32

Source: Courtaulds Archives, Coventry, Annual Accounts of Cook, Son & Co. The accounts for 1933 and 1935 are missing.

Cooks' capital was increasingly diverted into portfolio investment, and the sale of property and shares accounted for part of the profits.

Though the main tendency in the inter-war rationalisation movement in cotton was to form horizontal combinations, it is relevant to add that the merchants who had become manufacturers were now joined by a few old-established manufacturers who became merchants. Comparison of the capitals of these vertical combines with those of the horizontal ones suggests they were by no means dwarfed by the better-publicised developments.[37]

It has been estimated that in 1914, 90 per cent of hosiery and knitwear, the small firm sector of textiles, was sold through warehouses. The Hosiery Working Party set up by the government after World War II maintained that the wholesalers still retained over 50 per cent of the trade, particularly that of the small producers. Jefferys estimated that this varied from 50–55 per cent for women's hosiery to 65–70 per cent for men's hosiery, underwear and knitwear. The Hosiery Working Party was quite prepared to defend the traditional system, as the wholesalers were the only means of supplying the numerous small retailers. The chain stores admitted they could not serve centres of population of less than 10,000 people or provide wide choices of quality, design, pattern and colour. In 1946 the system still appeared to have an indefinite future, even though it had largely disappeared in the USA.[38]

IV

The Resurgence of Merchanting

Led by M & S, the quarter century after World War II saw the increasing domination of the mass-market retailers. The work of various post-war market research consultants has left a reliable record of their ever-growing share of the domestic market. Their role was however much more than that of bulk purchasing for popular consumption.

From the earliest period the 'contract sector' was dominated by a relatively small number of efficient producers favoured by particular chain stores. In particular, M & S developed a 'special relationship' with its suppliers, a position of quasi-independence that was a dimension of the paternalism better known in their staff relationships. The earliest suppliers – firms like Djanoglys (knitwear), Kayser Bondor (fully-fashioned hosiery), Prevezer Bros. (cheaper hosiery), Jersey Kapwood (lingerie) and Dewhirsts (clothing) – enjoyed particular favour, but later innovators such as Brentford Nylons (bedding) and F.I.I. (footwear) quickly became major suppliers.[39] Firms not meeting the exacting standards of Marks & Spencers could fall from grace, but long associations have been more characteristic. In the mid-1980s the contract knitters together accounted for 60–70 per cent of UK production; a decade earlier the figure was possibly a little higher.[40] The important point here is that these leading British manufacturers were as dependent on bigger organisations for marketing as ever their predecessors had been. Their vulnerability was often gossiped about in the trade (though seldom in the trade press), but as the contract producers proved to be so much more successful than those bought out by Courtaulds, Coats Paton, Tootals, and other vertical combines in the 1960s, the 'independent' (branded) sector often appeared more exposed and hence less attractive to investors.[41]

The profitability of the contract producers was not simply a matter of long production runs. During World War Two Simon Marks and Israel Sieff sat on various technical committees which brought together teams of scientists to work out specifications for 'utility' schemes, and they recognised and deplored the lack of research in the British textile industry. After the war they used their own laboratories to refine this approach, leading their suppliers on the technology of production and its relation to new design. In the 1960s, when many textile producers were assailed with take-over bids, Marks & Spencers encouraged and helped them to maintain an independent strategy, so perpetuating the traditional structure.[42]

In its early years, M & S sold a wide range of cheap haberdashery, some of it of Continental (especially German) origin, but in the post-war years the company pursued a well-advertised 'Buy British' policy. An important part of the change came in the 1930s when some of its Jewish suppliers emigrated to Britain, or captured German business. Even in 1988, Marks & Spencers' direct imports were estimated as low as 12 per cent,[43] but in the mid-1980s it is said that the chain store has been quietly encouraging its suppliers to subcontract part of their manufacturing operations overseas to increase the variety of goods on sale. Meanwhile its less successful chain store competitors (British Home Stores, Littlewoods, Woolworths and the like) have been importing much more cheap clothing and other goods from abroad. In this manner they have operated as merchants for several years. The most accomplished firm in what is now called the 'globalisation of retailing' is probably the Dutch family-owned chain stores C & A. Their operations are kept most secret, but it is believed they buy round the world for sale across Europe. Further evidence of this strategy is practically impossible to obtain as it is politically sensitive, but it seems to have originated in the late 1950s and 1960s in clothing, with Hong Kong producers seeking access to the UK and USA markets.[44] At the same period, the UK hosiery industry, which had been largely committed to full-fashioned, gave way before large imports of Italian seamless stockings.[45]

The 1960s saw a major restructuring of the British textile industry led by Courtaulds. Frank Kearton tried to secure the market for Courtaulds' artificial fibres by buying up scores of spinning, weaving and knitting firms, so forming a vertically-integrated conglomerate. Major rivals, notably Vantona Viyella (backed by ICI), Coats Patons, Tootals, and the Dawson Group, responded by scrambling to acquire other manufacturing capacity and building their own vertical groups. Many old established family businesses were delighted to be able to sell on favourable terms. This story has already been told and need not be repeated here, except to make two points. One is that Courtaulds' acquisitions included the remnants of several of the old warehousing firms, including Cook & Watts (Cooks of London united with S. & J. Watts of Manchester), I. & R. Morley, Bradbury Greatorex, and Thomas Adams. When Coats took over Welch Margetson, the old merchant houses were all but extinct. The other point is that vertical integration proved to be a pretty distastrous experiment; certainly the contract producers and remaining independents maintained profits and payrolls much better in the difficult 1970s, and the policies of the Kearton era were quickly dropped. Nevertheless, a hole was left in the production chain at the distribution stage.[46]

The balance of trade tipped in favour of the importers in 1970. By 1986, imports of clothing into Britain reached almost £1,700m, while British manufacturers achieved exports of less than half that, £800m.[47] Official statistics in fact convey only a limited notion of the nature of the trade, for much of the importing is done by British and other West European firms who contract with Hong Kong producers. Other domestic enterprises are involved in what is know as 'offshore processing': sending cut pieces of fabric to a sub-contract factory on the 'Mediterranean fringe' (Turkey, Greece or Yugoslavia), in the Philippines, China, or other Third World countries.[48] Britain has no official published records of this trade.

Since the 1960s, Hong Kong has been much more than a cheap labour producer of clothing. In that decade the colony invested in clothing finishing and manufacture in Singapore, Taiwan and Macao. In the 1970s it extended to Sri Lanka, the Philippines and Indonesia, with some investments in Europe and the USA to improve the service to customers. Then in the 1980s the focus of new enterprise shifted to China, with wholly-owned subsidiaries, joint ventures and contract production. This internationalisation of the Hong Kong clothing and textile industry was stimulated not only by low labour costs but also by continued quota jumping. It has made it easy for British importers to draw on the production of the Far East 'in one-stop shopping'. The EEC's Multi-Fibre Agreement on restrictions on imports restrained some of those imports, but because they were on quantities (rather than value) encouraged the Hong Kong entrepreneurs to move up market.[49]

The textile machine building industry is even more international than clothing and knitwear, and this is speeding the pace of change. The older Swiss, German, and Italian builders are hard pressed by the Japanese, and this is now bringing the highest quality machinery to new Third World exporters like Brazil and China. For Western textile merchants the sources of good quality cheap imports proliferate.[50]

The 1970s were a particularly difficult period for British textiles, culminating in the near-crisis of 1979–81. The industry suffered from an intensification of overseas competition, exacerbated by government policies which offered no support (apart from subscribing to the MFA) and kept the pound sterling high. Meanwhile the mass merchandising of the chain stores suffered its first reverse in a generation, with a rise in demand for fashion and individuality in clothing which favoured the specialist retailers. M & S, now under Lord Raynor, showed less commitment to traditional suppliers, and directed its enterprise to developing new retail outlets on the Continent and in the USA. The contract sector of the industry was thrown back on its own resources as never before.[51]

A solution was on offer from the clothing industry's best-known international firm of consultants, Kurt Salmon Associates. Most likely they brought their experience in the USA and Germany to bear on Britain's problems. 'To maintain profitability, apparel suppliers must see themselves not only as manufacturers but also as *specialists in the management of product concept and procurement*. The development of a sourcing (ie importing) policy based on this viewpoint can help manufacturers to *regain the initiative* lost to retailers in past years', they urged in the *British Clothing Manufacturer* in September 1979. Several of Kurt Salmon's British clients were major M & S contractors.[52] The chain stores, themselves intent on expanding their international retailing operations, could not ignore the overseas contracting practices of large clothing producers like Levi Straus (the US jeans manufacturer) and Triumph International (a German underwear manufacturer).[53]

The heirs of the vertical conglomerates also had to seek new strategies to meet the new exposure. Courtaulds under Hogg has quietly pursued a policy of diversification out of textiles and internationalised its remaining interests in the industry (now 40 per cent of sales). David Alliance of Coats Viyella has sought to protect its position by building an ever-bigger and more diverse textile conglomerate, while Dawson has invested heavily in the USA.[54] But the strategy that has caught the imagination of the City and financial press is that of Maddrell of Tootals, which has shifted sharply from being a production-led to a distribution-led company. The precise nature and implications of this strategy must be examined in more detail.

The Tootal strategic plan, the company reports, 'is built around our marketing and sourcing strengths'; the last phrase is the jargon of the textile industry for buying overseas. The global nature of the modern textile industry creates significant opportunities in moving products around the world. Between 1980 and 1984 the Tootal Group wrote off £71m, eliminating all spinning, weaving and knitting in the UK together with substantial printing capacity. The Tootal shirt and tie factory at Londonderry was sold in 1987. Remaining manufacturing capacity in the UK is therefore vestigial, consisting only of Steibel lace, Osman towels and Clover Leaf table ware, the latter a new acquisition in Swindon. Tootal Clothing is now a branch of the organisation that designs clothing at Rainhill (Liverpool), 'scanning distant horizons for design, ideas and low cost, quality fabrics . . . while maintaining a close-up focus on their customers' needs and choices' through continuous dialogue with M & S and other contractors. Main suppliers of clothing include the Indian textile group Mafatlal and buying offices in Singapore and Hong Kong. The traditional Tootal thread business is now substantially supported by mills in China. The whole international operation is made possible by the new information technology, particularly the possibility of instant worldwide transmission of designs. In a word, Tootals has become a new-style textile merchant, based on the potential of instant international communication.[55]

The Tootal strategy might be counted as just one strategy among several that may or may not win the day, but for two considerations. One is that the globalisation of textile production is now a process of change that can be identified in the reports of an increasing number of smaller clothing and knitwear companies. Because of fears of adverse publicity about employment, most of them keep a low profile, so it is only possible to assemble a tentative list (Table 6). Some clothing manufacturers are known to have abandoned all production in the UK, having all their goods made in the Hong Kong region with factories working for them under contract to high quality specifications in the way the industry has learned from M & S.[56] The German, US and Japanese textile industries are committed to similar policies. The other consideration is that the giant Coats Viyella has now adopted a policy closely akin to Maddrell's. According to Alliance's 1988 *Report to Employees*:

> Management should plan to minimise the adverse effect of changes in economic conditions by relocating manufacturing capacity to countries benefiting from enhanced competitiveness or by sourcing from them. Alternatively, it should invest in technology superior to that of its competitors [at home] or in developing markets where its know-how gives significant commercial advantages. It should withdraw from sectors where returns have no reasonable possibility of meeting group targets . . . I am happy to report that implementation of our plans in all these areas has been going ahead urgently.

Part of the urgency sprang from Tootals' superior and steadily improving profitability the previous decade. Alliance's anxiety to adopt this policy hit the headlines in May 1989, when he announced a £395m takeover for Tootal, with Maddrell to be the Managing Director.[57] City stockbrokers

TABLE 6

SOME BRITISH TEXTILE MANUFACTURERS IMPORTING FROM OVERSEAS PRODUCERS, 1988–9

Company	Capital	Imports	Source(s)
Coats Viyella	£861m	knitting fabrics for 'out-and-sew' clothing	Turkey
Courtaulds	£1,342 (40% in textiles)	knitted fabrics	Portugal
		lace	
		elastometric fabrics	USA
		clothing	Tunisia, Morocco
Tootal	£370m	fabrics	India
		blouses	Malaysia
		clothing contracts	Hong Kong and Singapore
William Baird	£220m	knitwear	China
Alexon (Steinberg)	£108m		China
Response	£93m	knitwear and clothing	Hong Kong
S.R. Gent		clothing	Sri Lanka Philippines
Albert Martin		knitwear and clothing	Sri Lanka, Dubai, Macao
Klynton Davies		knitwear	Malaysia, Singapore
T.W. Kempton		knitwear	Greece
Aitch	£8m	clothing and knitwear	Hong Kong
Albion Knitwear		knitwear	Far East

Sources: Annual Reports of the companies.

Hoare Govett commented: 'One of the failures of Coats Viyella has been that, in the period post the merger of Coats Paton and Vantona Viyella (1986–89), the longer term strategy of growing an international sourcing business to match its international marketing capability made precious little headway'.[58] Thus the City and the financial press are urging the shift towards international mercantile and manufacturing organisations as a condition of survival. Courtaulds is said to be establishing an overseas sourcing organisation to match that of Tootals and Coats Viyella.

V

Conclusions

The mercantile function in British textiles has been consistently underrated over the years. Researchers and commentators largely ignored it, partly for want of information, especially on London, partly because they were dazzled by manufacturing and distribution lacked the same glamour. The few economists presently interested tend to treat merchanting as part of the manufacturing strategy.

During the long period of decline of the British textile industry, three strategies for survival have in turn attracted most interest in and outside the industry: horizontal integration in the 1890s and again in the 1920s and 1930s, vertical integration in the 1960s, and globalisation in the 1980s. The last reverts to a major mercantile role in which the British first won an international economic reputation in the seventeenth and eighteenth centuries. It harmonises too with the informal relationship that has proved easiest to establish and most continuously effective in the post-war world: that between the major retailers and their suppliers.[59] In this sense, at least, globalisation seems to hold out more hope of success than the integration strategies of the past that cost so much toil with so little benefit. The globalisation of British textile companies is much more than a search for cheap labour. Indeed, the rapid advance of mechanisation in the 1980s has made labour a small percentage of production costs, and one that is expected to decline further.[60] The policy declarations cited in this paper confirm that transnational groups are working to optimise returns by restructuring in less developed countries *and* in developed countries where mechanisation and access to markets offer acceptable returns. The key to productivity and profitability is now the structure of knowledge and information flows relating to fashion, design, production costs and (above all) market opportunity. Entrepreneurial decisions are the product of a complex interplay of calculation, estimation, hunch and feel that must be closely akin to the traditional merchantile function.

The announcement by Courtaulds that its textile activities will be split off from the conglomerate's other interests in 1990 has been accompanied by publicity designed to encourage public confidence in the viability of these activities. The announcement may suggest some attempt to arrest or reverse the decline of British manufacturing referred to in the last section of this article. In point of fact the demerger of Courtaulds Textiles is the outcome of a strategy inaugurated in 1986 following a management exercise known as CTG 2000 which involved the setting of targets for output and location of production to the end of the century. Central to this planning was the identification of profitable manufacturing opportunities in the UK and the shift of other activities or processes to lower-cost countries. In 1985 80 per cent of Courtaulds' textiles and clothing were produced in the UK and 80 per cent of the market was domestic. By 1989 about 70 per cent of the products were home produced and 65 per cent of the market was here; at the end of the century the figures may both be down to 40 per cent.[61] At the same time as Courtaulds' announcement, Intelligence Network International reported that 45 per cent of a sample of British textile and clothing firms with a turnover greater than £1m and more than 50 employees were involved in outward processing, though at present this involves relatively small volumes of work going to Portugal, the Far East, Eastern Europe and North Africa.[62] Nevertheless, there can be no doubt that smaller firms are following the lead of Tootals, Coats Viyella and Courtaulds, and that the mercantile function is destined for greater importance as more semi-finished and completed goods are bought in.

NOTES

1. The best bibliography of the extensive literature on the cotton industry in this period is in D.A. Farnie, *The English Cotton Industry and the World Market, 1815–96* (Oxford, 1979) pp.329–84.
2. S. D. Chapman, *British Mercantile Enterprise in the Nineteenth Century*, Ch.6 (forthcoming).
3. R. Robson, *The Cotton Industry in Britain* (1957) Ch.IV.
4. R. Gatty, *Portrait of a Merchant Prince: James Morrison 1789–1857* (privately published, Northallerton, 1981); S. Smiles, *George Moore, Merchant and Philanthropist* (1878); E. Hodder, *The Life of Samuel Morley* (1888); C.M. Leaf, *Walter Leaf, 1852–1927* (1932); N.B. Harte, *A History of George Brettle & Co. Ltd., 1801–1964* (1977); F M. Thomas, *I. & R. Morley: A Record of a Hundred Years* (1900); *Dictionary of Business Biography* articles on J.D. Allcroft, Sir George Williams.
5. Manchester Public Library, Tootal Broadhurst Lee minute books, C.P.A. Minute books; J. Hunter, *History of J. & P. Coats* (forthcoming). Wolsey Ltd. was incorporated with a capital of £2.0 million in 1920 (private records).
6. S.D. Chapman, *The Rise of Merchant Banking* (1984); W.D. Rubinstein, *Men of Property* (1981) p.107.
7. Lord Hollenden's Estate Office, Leigh, Kent, I. & R. Morley sales data and other records.
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BOOK REVIEWS

HEATHER SWANSON, *Medieval Artisans: an Urban Class in Late Medieval England* (London: Basil Blackwell, 1989. Pp.ix + 189. £29.50).

Despite its somewhat grandiose title, this book is about the lifestyles and fortunes of York artisans between the late thirteenth century and 1534. Frequent reference is made to the regulation of crafts and trades in other towns, but only in order to provide parallel examples, and the analysis of places outside York is not sustained. The evidence for York is subjected to searching critical examination and sources such as the much-used freemen's rolls are tested and frequently found to be wanting. Unfortunately, it is not always possible to tell a connected story from the available records and it is a pity that the guild records, so plentiful for the sixteenth and seventeenth centuries, are relatively thin for the period before 1534. Each group of artisans – those working in the victualling trades, in textiles, clothing, leather, metal, building, and in the 'minor crafts' – is dealt with in a separate chapter: each area of work is referred to as an 'industry' although the description 'trades' or 'crafts' would be more appropriate. The final three substantive chapters deal with more general issues relating to the whole of the city's workforce: they are headed 'artisans and the civic authorities'; 'industrial investment', which is largely about trade and merchant investment; and 'wealth and social status'.

A number of general conclusions of more than purely local interest stand out from the intricate pattern woven by Heather Swanson. Artisans in late medieval York were a class in the sense that they formed a broad social stratum below that of the merchants and traders: the latter were generally much wealthier and enjoyed social and political power to which very few artisans could aspire. Women – largely absent from official records – played a crucial role in many areas of economic activity: girls were often trained alongside boys without a formal apprenticeship; in later life they frequently worked beside their husbands or pursued an alternative career to supplement the household income; in widowhood they strived to continue the family business or instructed a new spouse into the craft's mystery. Such 'invisible' women were of crucial significance in maintaining the fabric of family life. New insights into the demise of York textiles are also provided. Old arguments stressing the stifling effects of guild exclusiveness are rejected and a case is made that, in part at least, the decline was connected with the changing patterns of investment amoung York merchants. This may well have been the case, but the full story cannot be told without further analysis of conditions in the West Riding where country producers were increasingly out-competing their urban rivals.

As a study of York artisans, Heather Swanson's beautifully produced book is excellent, full of unexpected insights and rich details which will delight medievalists. Let us hope that similar studies for other towns will soon be forthcoming.

University of Hull DONALD WOODWARD

JONATHAN I. ISRAEL, *Dutch Primacy in World Trade, 1585–1740* (Oxford: Clarendon Press, 1989. Pp.xxi + 462; graphs and maps. £35).

To follow *The Dutch Republic and the Hispanic World, 1606–1661* (1982) and *European Jewry in the Age of Mercantilism, 1550–1750* (1985), Jonathan Israel, Professor of Dutch History and Institutions in the University of London, tackles a wider canvas with his third volume. During the later Middle Ages, it has often been argued, Venice served as the hub of the world economy until it was supplanted about 1500 by Antwerp. Then, after a brief period of Genoan dominance, Amsterdam became the focus of European economic activity for the best part of two centuries until it was overtaken by London. Fernand Braudel, whom Israel somewhat irritatingly repeatedly calls the French *grand maître*, saw Amsterdam's experience as a simple matter of rise and decline with the turning point about 1650. Braudel's interpretation is challenged by Israel, who proposes instead a sequence of seven phases. The Dutch breakthrough to world primacy between 1590 and 1609 was followed by a period of expansion between 1609 and 1621, the period of the Twelve Years' Truce. During the general crisis of the European economy between 1621 and 1647, Dutch primacy received a check which led to a 'profound restructuring' of the pattern of Dutch trade with an expansion of trade with Asia compensating for a decline in trade with the Baltic and the Mediterranean. Expansion between 1647 and 1672 resulted in the zenith of Dutch influence. Then, initiated by the crash of 1672, three periods of decline followed. The Dutch position was eroded between 1672 and 1700, then between 1700 and 1713 no aspect of the Dutch economy escaped the impact of the War of Spanish Succession. The final phase, characterised as 'decline relative and absolute', has been much discussed. Israel rejects the views of Johan de Vries – no decline before 1780; Jan de Vries – decline 1670–1750 but recovery thereafter; and Thomas Riley – no decline at any stage. Instead he argues that contemporary Dutch economic writers, who held that the essential vitality of the Dutch economy had been destroyed by the middle of the century, were right. Espousing a chronological rather than a topical approach, Israel uses these seven phases as the basis for the core chapters of this book. These are flanked by two chapters which provide a run-up to 1590 and a run-down from 1740 entitled 'afterglow and final collapse'.

Within the core chapters, Israel discusses the main branches of Dutch seaborne commerce, with the Baltic, with the Meditarranean, with the East Indies and with West Africa, the Caribbean and Brazil. Using a detailed statistical underpinning – even though some of the sequences of figures stop some way short of 1740 – Israel challenges the further Braudelian argument that Dutch commercial dominance was based on bulk trades, the carriage of grain, salt, fish, timber and other high-volume products. This view Israel calls 'a profound misconception'. Rather he suggests that the contribution of the rich trades, the high-value goods such as spices, sugar and textiles (both from Europe and outside), was also important. And, as has been often argued, Dutch commercial dominance was facilitated by a degree of expertise in finance, insurance and brokerage such as none of their rivals possessed.

A further strand to Israel's argument about the nature of Dutch primacy is his view that Dutch industry played an increasingly important role in the expansion of Dutch exports, notably textiles, pottery, paper, diamonds and other manufactures as well as shipbuilding. But, while acknowledging the importance of Dutch industrial skills, his advocacy of this point falls short of

Immanuel Wallerstein's view that the Dutch Republic was 'the leading producer of industrial goods' at this time.

No doubt debate will continue about particular aspects of this story. In the meantime, the range and erudition of this volume makes it a valuable guide to a study of the conduct of European and world trade and the nature of Dutch primacy in the early modern period.

Exeter WALTER MINCHINTON

PAT KIRKHAM, *The London Furniture Trade, 1700–1870* (London: Furniture History Society, 1988. Pp.219; illus. £15.00).

Furniture manufacturing has received relatively little attention from academic historians. Like other types of light industry it has been characterised by large numbers of small firms, making serious industry-wide study difficult. Much of the literature has focused upon design and collecting, the only major exception being J.L. Oliver's *Development and Structure of the Furniture Industry* (1966), which is primarily an analysis of locational changes. In recent years, however, the Furniture History Society has been making strenuous efforts to encourage a more scholarly approach to the history of furniture manufacturing.

The London Furniture Trade concentrates upon 'the development of the comprehensive manufacturing firm which was an outstanding and distinctive feature of the quality West End trade in London up to about 1870' (p.5). The East End 'garret-masters' are not included, although it is noted that growing competition and pressure on prices led to the decline of the West End trade, and by the 1870s the London furniture industry was firmly based upon the East End. The opening two chapters survey the various crafts in furniture making – carving and gilding, cabinet making, chairmaking, frame-making, bedstead making, and upholstery. In chapter three, Kirkham examines training methods in the industry, and considers the consequences of the breakdown of the apprenticeship system. The second section of the book focuses upon business organisation. During the period, firms grew larger and more complex as they brought together once-separate crafts within the individual enterprise. The third section examines the split between craft, design and management; increasingly, firms were run by entrepreneurs rather than craftsmen, while the first half of the nineteenth century saw the emergence of the professional furniture designer. Section four looks at invention and innovation, with chapters on new materials and patents. Interestingly, there were few patents relating to machinery. Although preparatory work had been mechanised, furniture making itself was still mostly hand work in the 1870s. Kirkham argues that there was little incentive to mechanise because of the high level of skill in the quality trade and the low cost of labour in the cheap trade. The concluding chapters look at the London Livery Companies – notably the Upholders' Company and the Joiners' Company – and the early trade societies.

In the course of her survey, Kirkham sheds a good deal of light upon the activities of partnerships in the industry. Although family firms predominated for much of the period, few survived for more than two generations – an indication of the risks involved in furniture manufacturing and the problems of succession. Chippendale faced a serious crisis in 1766 when his partner's executors wanted to withdraw capital from the business, and entered into a new partnership to avoid imprisonment for debt. Several instances are recorded of important firms being carried on by widows – most notably Alice Hepplewhite, who continued the family business after the death of her husband George, and published *The Cabinet-maker and Upholsterer's Guide* in 1788. Evidently the question of succession was a substantial problem for many firms in light industry, as well as for Daunton's City partnerships.

This is not a business history, and inevitably there are topics about which business historians would like to know more. The size of firms is considered in terms of numbers employed and size of stocks, but no information is given on turnover or profitability. In view of the problems and uncertainties attending partnerships, it would have been interesting to know whether the largest furniture manufacturers showed much interest in limited liability in the third quarter of the nineteenth century. Perhaps too, readers could have been given a clearer picture of the changing market to set the West End firms in perspective. The period saw substantial growth in demand and major changes in fashion, providing manufacturers with both opportunities and pressures. Further analysis here would have added much to our understanding of the important but much neglected question of how tastes were shaped, and how manufacturers responded to market forces.

Whilst we still await a general history of the furniture industry, this is none the less a valuable addition to the literature. It is attractively presented, and modestly priced. Kirkham makes effective use of a wide range of primary sources, and provides a substantial bibliography. It is to be hoped that the Furniture History Society will contnue to encourage and publish research of this quality.

Bath College of Higher Education JON PRESS

R.A. BUCHANAN, *The Engineers: a History of the Engineering Profession in Britain, 1750–1914* (London: Jessica Kingsley Publishers, 1989). Pp.240. No price given).

The industrial revolution generated a demand for new engineering skills on an unprecedented scale, and the Institution of Civil Engineers, formed in 1818, became the first permanent organisation formed in response to the new developments. Under its first President, Thomas Telford, the country's most distinguished engineer at that time, the Civils became the model for subsequent engineering professional institutions, formed in order to organise mutual instruction among specialist engineers, to maintain entry standards, to encourage members to improve skills, to promote specific training programmes for engineers, and to monitor, through disciplinary action when necessary, the conduct of members. The proliferation of separate engineering professional institutions proceeded rapidly following the initiative of the mechanical engineers in 1838, much influenced by the sudden flowering of railway engineering on a large scale. A process of extreme fragmentation followed, illustrated by the formation of the Institution of Naval Architects in 1847 and culminating in the Institution of Automobile Engineers in 1906. After charting the growth of the profession in detail, Buchanan judges its major achievement to have been the development of an enduringly successful organisational model, which he describes as 'one of the outstanding administrative achievements of any professional body', to which members remained loyal and formed a professional 'identity as part of a creative association'.

Excessive fragmentation, however, presided over by the Council of the Civils which failed to recognise the possible consequences of many separate engineering bodies speaking with many different voices, weakened 'professional self-confidence' after 1880. On such a critical issue as training, preoccupation with specific skills proved to be divisive, though no verdict is given on the extent to which the engineering profession may have lost more than it gained from proliferation. Neither is there a view of the role of the institutions in the decline of the British economy before 1914. Buchanan asserts that by temperament British engineers were conformists, and should not, therefore, be blamed for a decline in 'the industrial spirit'. Perhaps more helpful in elucidating the contribution of the institutions than the superficial psycho-sociological approach presented here would have been a content analysis of the publications and transactions of those bodies.

In the final chapter, 'Engineering and Society', Buchanan seems to be less interested in the question of whether and how the institutions helped or hindered the British economy between 1880 and 1914 than the connections between British engineers' self-perception in the 1980s and their pre-1914 history. Because of the absence of any information on the history of the institutions during the intervening years his answers do not carry conviction.

University of East Anglia ROY CHURCH

OLIVE and SYDNEY CHECKLAND, *Industry and Ethos: Scotland, 1832–1914* (Edinburgh: Edinburgh University Press, second edition, 1989, pp.232. £8.50).

This book was originally published by Edward Arnold in 1984 as part of their multi-volume *New History of Scotland*. As each volume in the series goes out of print, Edinburgh University has taken the unusual but welcome step of re-issuing it with corrections, revisions and the new material (in this case a whole chapter on women in Scotland, their hopes and aspirations, which has been tagged on to the end).

The central theme of the book is the nature of Scottish identity in a period when sweeping industrial change led increasingly to the assimulation of Scotland to England and the Empire. 'In consequence', the Checklands argue, 'Scottish identity was threatened not only by the new age of industry and urbanization, but also by the dominant culture and polity of England. In this way industry and ethos are the two great aspects of Scottish evolution between 1832 and 1914. To them all else can be related'. They distinguish between the stereotyped but not necessarily incorrect image of the Scot held abroad – steady, reliable and excelling in a variety of disciplines but also intransigent, humourless, tight-fisted and whisky-loving – with the more important intrinsic view: how Scots saw themselves. This revealed a people divided by the past and by rapid industrialisation into Highlanders versus Lowlanders, Presbyterians versus Catholics, capital versus Calvin, even republicans versus monarchists. But there were also unifying forces, most notably geography, history and shared myth, literature and education, which ultimately proved stronger. The result is what the authors term a balance sheet of Scottish ethos and identity, with elements of division and conflict on the one hand and elements of shared feeling and experience on the other. It is the task of the historian, they argue, to fuse the two sides together and this they attempt to do in a series of chapters on such topics as urbanisation, rural society, education, politics, religion, the arts and sciences, and the ruling classes. The most important, however, are those which deal with the economy, since it was the bedrock upon which the Scottish rational ethos rested.

The achievements of the Scottish economy during these years were very real and not confined to the Central Belt; indeed one of the strengths of this book is the way in which it examines developments elsewhere. The authors make good use of recent research, particularly in Scottish business history, to provide an excellent account of the economy's strengths and weaknesses, including the ultimate failure to provide enough employment to keep Scots from emigrating in huge numbers. There might have been more discussion of the economic and social consequences of the Scots exporting so much capital (perhaps £500 million by 1914) and of the failure to develop a significant light-engineering sector. It also needs emphasising that Scotland had a much more balanced economy than those of the English regions and Wales; in this sense it was a miniature version of England rather than simply another region. These criticisms, however, should not detract from what is a highly stimulating and original textbook. Sydney Checkland would have been delighted by its re-issue – and by the additional chapter.

University of Aberdeen R.E. TYSON

T.M. DEVINE (ed.), *Improvement and Enlightenment: Proceedings of the Scottish Historical Studies Seminar, University of Strathclyde, 1987–88* (Edinburgh: John Donald Publishers Ltd., 1989. Pp.ix + 146; illus. £20.00).

This slender volume consists of six papers presented at the Scottish Historical Studies Seminar in 1987–88. The Seminar was established as a forum for scholars working in Scottish social history where recent research findings could be unveiled and topics explored from a range of disciplinary perspectives. Whilst the editor, the participants and the publisher are to be congratulated on the speedy appearance of the proceedings, as an example of 'the state of the art' in Scottish social history they raise uneasy questions about the extent of disciplinary cross-fertilisation and innovatory method. Evidence of both is not over-abundant.

Variety certainly is. There are papers on nationalism (Smout), James Boswell (Noble), education and literacy (Houston), Alexander Webster's 1755 'census' of Scotland (Mitchison), the buildings of the late Scottish Enlightenment (Markus), and the emergence of the new élite in the western Highlands and islands (Devine). The papers by Smout and Noble deal, in very different ways, with a topic of perennial concern to the Scots, namely, their identity and their response to how they believed others regarded them. Houston performs a valuable service, rescuing the proceedings from such fascinating introspection and setting Scottish educational achievement in a wider, European context. The result, as so often in Scottish matters, is that the achievement appears less distinctive than the Scots once imagined. This, alas, may also be true of Scotland's demographic history, which appeared to have been put on a much surer foundation by the work of the late Michael Flinn and his research team. Mitchison, in an intriguing re-assessment of Webster's 1755 'census' suggests that Scottish population structure was not markedly different from the English and that the sharp contrast between the two nation's demographic regimes ought to be abandoned. It is not easy to recover from this bombshell to contemplate Markus and the classification of buildings, the most richly multi-disciplinary of the essays.

Business historians are likely to find Devine's paper of greatest interest, for it explores the quite remarkable transformation in landownership in the western Highlands and islands between 1800 and 1860 which saw the profits derived from commercial and professional success elsewhere invested in some of the most marginal land in the British Isles. Devine explains this inherent paradox partly in terms of the powerful psychological drives and needs of the very wealthy, an explanation which might have gained by use of the economic concept of 'positional goods'.

University of York RON WEIR

ELIZABETH ROBERTS, *Women's Work, 1840–1940* (London: Macmillan Education Ltd., 1988. Pp. 88. £3.95).

My initial reaction upon reading the title of this book was to conclude that Elizabeth Roberts is clearly a very brave woman. She is to be commended not only for her bravery, however, but for the notable contribution she has made to the Economic History Society's series of Studies in Economic and Social History. In keeping with the usual high standards of these publications, the writer has outlined the main themes and questions associated with the study of the work of working-class women in the period 1840–1940. In so doing, she provides a lucid and thoughtfully written introduction to a complex area of economic and social history, which has become increasingly prominent in recent years.

For business historians new to the study of Women's History the book indicates a number of potentially fruitful directions. Prominent among the main research problems associated with working-class women's work during the period is the question of sources. There are very real difficulties in attempting to quantify and assess the relationship of women to local labour markets. It is clear that business records might well offer an opportunity of filling in some of these gaps. Business history can add considerably to our understanding of the casual mechanisms of labour market segmentation and, in particular, the relative importance of labour demand and labour supply factors. In addition, Elizabeth Roberts suggests that, in terms of consumer demand, consideration of women's role as financial decision-makers might well expand our understanding of changes in housing markets and associated changes in manufacturing and retailing.

This book provides us with an excellent survey of the main issues and debates around women's work and employment. Elizabeth Roberts is to be congratulated.

University of Liverpool PAT AYRES

MICHAEL J. FREEMAN and DEREK H. ALDCROFT (eds.), *Transport in Victorian Britain* (Manchester: Manchester University Press, 1988. Pp.viii + 310 illus., £29.95).

As Michael Freeman points out in his introduction to this excellent collection of essays on nineteenth-century transport development, the Victorian Age was synonymous with the age of the railway. It is hardly surprising, therefore, that a considerable part of his own contribution and two of the substantive essays should examine the growth of the railway system. Thus Terry Gourvish's chapter on the formative years, covering the period 1830–1870, is complemented by Peter Cain's contribution dealing with the mature system after 1870. The remaining chapters examine the development of urban transport (T.C. Barker), coastal shipping (P.S. Bagwell and J. Armstrong), and the ports and the shipping industry (G. Jackson). In sum, the book provides a comprehensive analysis of transport development in the steam era and its authoritative summaries of recent research render it an ideal companion to the editors' earlier volume on transport in the industrial revolution. Gourvish's chapter inevitably covers much of the ground traversed in his established contributions to the literature, but he does provide a fine account of railway traffic development, together with a succinct and clear evaluation of the railway's contribution to economic growth. Similarly, Cain's chapter is coloured by his previous work in the field, with brief but excellent analyses of pricing policy, costs and profitability, and his latest thoughts on combination and the state. Barker's chapter on urban transport examines the role of horse-drawn vehicles and railways in urban development and concludes with some pointed observations on electrification and motorisation. Its coverage is biased towards London but the author never loses sight of non-metropolitan activities. Barker's conclusion that the key development is urban transport was the greater supplementation of human by animal power is an important reminder that the history of transport before 1914 is not synonymous with the history of mechanical traction. Bagwell and Mingay's chapter on coastal shipping is a most useful survey of a sector of the transport industry which hitherto has been given scant coverage by historians. Yet as the authors point out, coastal shipping made a major contribution to the movement of freight (if not passengers) throughout the Victorian period. Indeed, as late as 1910 coastal shipping provided nearly 60 per cent of freight transport in the UK compared with the railways' 40 per cent, when measured in ton-miles. The final chapters by Gordon Jackson are useful complements. His survey of port development traces the record of physical expansion and technical change, as well as the trend of investment and the contribution of the railway companies. He reaches the sobering conclusion that the massive expansion of the Victorian age was based on the 'fundamental misconception . . . that trade would continue to grow along established routes' (p. 245). The weakness of the system was cruelly exposed after 1920 in the wake of the collapse of the coal export trade and the emergence of chronic over-supply of port facilities outside London and Liverpool. The final chapter on the shipping industry tells a similar story of considerable expansion facilitated by technological developments, leading to the exploitation of new markets on a worldwide basis as a prelude to the depression of the interwar years. As Jackson points out, Britain's shipping industry was one of the most successful sectors of the later Victorian economy: its productivity record was impressive as was the range of its operations. Yet the industry was vulnerable, first in terms of the mounting over-provision of ships, and secondly as a result of the reliance on trading relationships which were to prove extremely fragile after 1920.

This book is a substantial contribution to the history of transport. The judgements are shrewd and balanced, and reflect the most recent developments in the literature. It should prove popular with second year and third year students of economic history and historical geography.

University of Lancaster M.W. KIRBY

JONATHAN LIEBENAU (ed.), *The Challenge of New Technology: Innovation in British Business since 1850* (Aldershot: Gower, 1988. Pp.x + 155; illus., diagrams. £23.50).

A collection of essays dealing with innovation in the 'science based' industries is to be welcomed, especially since this is a relatively uncharted area of research for economic historians. The jacket claims that this book covers the main science based industries in Britain, but in truth it would have required a much thicker volume to fulfil this promise.

As for the essays themselves, Mari Williams examines the course of innovation in the scientific instrument industry, paying particular attention to the period between 1900 and 1920. She finds that although some firms, such as Cambridge Scientific Instruments, maintained close ties with research scientists, in general the small size of British instrument producers limited their ability to compete with the Germans for technological leadership.

Jonathan Liebenau shows that between the 1880s and 1939 British chemical and pharmaceutical companies had fewer and smaller research laboratories than their German rivals. This situation was a reflection of the comparatively modest size of British firms and the debilitating effects of the separation of the academic and business communities.

In his essay on the Dowlais Iron Co., Edgar Jones outlines a classic example of an industry in which the risks of being at the forefront of technical progress were amply rewarded. Whereas Dowlais introduced Bessemer converters in the 1860s, its competitors at Cyfarthfa failed to follow suit until the 1880s and were subsequently taken over.

Geoffrey Tweedale argues that the emergence of metallurgy as an academic discipline in Britain was in substantial measure determined by the needs of the steel industry. He emphasises the beneficial effects of the close links between the steel producers and the metallurgy department of Sheffield University, and concludes that British steel-making techniques were unsurpassed before 1939.

According to Michael Robson, British pharmaceutical companies lagged behind the Germans in the development of new drugs before 1914. But during the war the British were forced to introduce a crash programme of research to produce substitutes for vital German drugs, including those for treating the syphilis epidemic in the armed forces.

David Edgerton considers research in the photographic industry between 1879 and 1939. UK firms failed to respond to Kodak's introduction of a cheap camera using film instead of glass plates. The small size of British firms hampered their basic research, which may explain Ilford's choice of the wrong system of colour photography in the 1930s.

In the last chapter Jonathan Liebenau discusses the patenting strategies of German and British chemical producers. After 1880 the Germans followed a policy of patenting everything in sight, with the aim of crowding out research by competitors. But, since British firms conducted very little research, this ploy did them no harm.

Although the essays by Tweedale, Robson, and Edgerton are particularly interesting, I suspect that, in its present form, this collection will be of greater value to students of specific industries than to those concerned with the broader issues of the history of innovation. The book lacks a framework within which to interpret the findings of individual contributors. Such a framework could have been supplied in the form of a more explicit introductory discussion of the economics of innovation. Otherwise it is difficult for the reader to make useful generalisations from such a disparate collection of studies.

University of York JOHN SINGLETON

JAMES YOUNG, *Socialism and the English Working Class: a History of English Labour, 1883–1939* (London: Harvester Wheatsheaf, 1989. Pp.x + 273; £28.50).

The hypothesis of James Young's latest book is that by concentrating unduly on the history of the labour movement, historians have overlooked or deliberately ignored the unconscious socialism of the English working class. This he develops in an extended analysis of themes such as the condescension of the middle-class socialist intelligentsia towards working people, the racism of the working class, the role of women, the impact of mass unemployment, and the radicalising impact of the First World War. Apart from a survey of the labour unrest of 1910–14, there is little of immediate interest in the book for business historians. Even so, the presentation is forceful and the argument convincing, particularly on the effects of the World War. It must be conceded, however, that the historical apparatus on which it rests is not always terribly secure and one wonders, therefore, if there is some significance in Young's acknowledgement to friends with whom he spent time in the pubs of Falkirk and Glasgow putting the world to rights.

Can this explain his apparent unfamiliarity with – or at least his failure to confront – so much of the literature which has appeared recently and which starts from the precisely the same premise that there is a gap between the movement and the people? Any attempt to recreate working-class culture might reasonably be expected to draw on the work of John Benson and Elizabeth Roberts, for example. Contrarily, the 'many historians' to whom Young frequently avers are a pretty eclectic lot. They range from the authoress of a Leeds M. Phil. who appears as 'the English labour historian' (p.198), through W.T. Colyer who, as a Marxist lecturer in the National Council of Labour Colleges, was hardly a disinterested witness, to the author of marginal historical works such as *Scrapbook for the 1920s*. Even those scholars whose works might be more generally recognised sometimes appear in disguise. C.L. Mowat turns up as C.H. Mowat and R.W. Lyman is transmuted into R.W. Layman.

Although the work is intended as piece of interpretive history, not all of the parts seem to fit very comfortably into it, while other matters are ignored altogether. Thus the sections on working-class racism are interesting and important but they do not feature in an otherwise comprehensive conclusion. In any case, their value is somewhat limited in that they concentrate on attitudes towards coloured immigrants. Anti-semitic, anti-Irish, and anti-German feeling were all common and deeply held sentiments in many working-class communities, as the campaigns surrounding the 1905 Aliens Act and the Leeds and London riots of 1917 indicate. They are not mentioned. Their inclusion might have led to some re-evaluation of Young's belief that racism became overt only after 1914. In similar fashion, although Young gives due weight to the persistence of working-class conservatism, important elements of working-class culture, such as religious and geographical loyalties, are ignored. Perhaps this is because their bridge-building potential does not fit well into his concept of an English society based on class and conflict. Yet despite the inadequacies and selectivity of some of the evidence, Young's general belief both in the radicalising effects of war and in the existence of a conscious and self reliant working class seems well founded. Whether that consciousness was *anti-capitalist*, as he insists, or merely anti-bureaucratic, is still open to discussion.

The Queen's University of Belfast KENNETH D. BROWN

LAURIE DENNETT, *Slaughter and May: a Century in the City* (Cambridge: Granta Editions, 1989. Pp.xvi + 282; illus. £19.95) and *Slaughter and May: a Short History* (Cambridge: Granta Editions, 1989. Pp.xi + 97; illus. £14.95).

These two versions of Slaughter and May's history, the shorter one intended for a wider readership and therefore without footnotes and copiously illustrated, were written to celebrate the firm's centenary of practising law in the City.

William Capel Slaughter (1857–1917) came of a family well established in the City for several generations. In 1879 he joined one of the City's then leading practices, Ashurst Morris Crisp & Co., as an assistant solicitor. William May (1863–1932), son of a Reading surgeon, was educated at Charterhouse and Oxford before he took articles with Ashurst Morris Crisp & Co. It was by an unusual and possibly unique arrangement that in 1887 Slaughter left Ashursts and set up in practice on his own account, retaining however, by agreement with Ashursts, a number of clients for whom he had been acting. Slaughter was joined by May when he qualified and the partnership began formally in January 1889. With the backing of Ashurst Morris Crisp & Co., the generous transfer of clients such as the Erlangers, their own not inconsiderable connections and undoubted ability, neither of the partners was in reality a 'poor struggling lawyer' although May described himself in those terms in his 1895 diary! This history has been enriched both by the fact that Slaughter and May, unlike many other City firms, did not lose all its archives during World War Two and by the discovery and use of William May's diaries.

Dennett explores Slaughter's close involvement with the Home and Colonial Stores and the expansion of the firm in the 1890s. Its participation in the affairs of the Steam Loop Co. and the litigation which followed over what would today be regarded as market-rigging throws an interesting light on business practices in the City at that time. Progress and prosperity was enjoyed by Slaughter and May despite the difficulties of 1914–18 and the death of Slaughter. The inter-war period brought new partners and new challenges in banking and commercial law, while the recollections and anecdotal material available enable a more detailed picture of the office, its inhabitants and some of its clients to be drawn. In World War Two many of the partners and staff were seconded to the Special Operations Executive.

While writing about what firms of solicitors have done over the last 40 years or so does present special problems of client confidentiality, one or two cases illustrative of particularly interesting points of law or finance could surely have been used without breaching that code, in the penultimate chapter which covers the years from 1945 to 1967. The final chapter takes us briskly through the changes which have turned Slaughter and May, like other major City firms of solicitors into international law firms, differentiating them so markedly from their fellows in the profession. Documenting this change as well as the histories of individual firms of solicitors is a relatively new field to which the history of Slaughter and May makes a useful addition. Publication of the charts of the partnership income, figures from which are used in the text, would have been immensely useful to business historians since so little has as yet been published in this area. One other minor quibble: it is strange that in a book otherwise so meticulously edited, the text (p.25) suggests that Matabeleland is a country other than Rhodesia. Both versions of the history are well illustrated and beautifully produced.

Business History Unit JUDY SLINN

P.E. DEWEY, *British Agriculture in the First World War* (London: Routledge, 1989. Pp. 262. £40).

This is the reworking of an important thesis. Dewey has set out to explore the ground of common opinion that the First World War transformed British agriculture. This opinion, which acquired textbook currency before 1930, was formed essentially by articulate and distinguished civil servants of irreproachable veracity, T.H. Middleton, E.G. Strutt, R.E. Prothero and A.D. Hall above all, who had both innovated and administered policy during the emergency and whose records emphasised the resolution of practical problems in a way which suggested not only forethought but also consistency of purpose. The war had imposed new imperatives on a country accustomed to importing 60 per cent of its foodstuffs and inured to free trade, since strategic planning, the threat of blockade and the need to conserve both foreign exchange and shipping space obliged the government to address the problem of import-saving. The solution lay in the management of agricultural resources in order at least to prevent hunger, to stabilise prices, to control the supply of labour and to encourage conversion of grassland to pasture, but the ideas, no doubt because they carried implications of coercion, were both slower to gain acceptance and less thoroughly applied than administrators conscious of the need for efficiency desired. Much of the retrospective rendering of accounts has tended to obscure the hard choices that were often compromised. Dewey has laid bare the inconsistency, inexactitude and incompleteness of wartime planning and its outcome. He accepts, indeed clarifies, the distinction between the two halves of the war, pointing out the greater pertinacity of policy after the formation of the Lloyd George coalition. Much of the apparatus of control, of planning, was not in place before 1917. Under Asquith coercion was less of a spur than high profits or moral uplift; under Lloyd George control evolved as much in response to acute and immediate danger as to rational policies of development.

When the system of agricultural planning was put into effect, the results were impressive. The powers of direction, price-fixing, subsidy and allocation were comprehensive enough to safeguard the food supply and to recompense those employed in agriculture, but they were too late. The long lead time between sowing and harvest, even more between insemination and slaughter, was difficult to accommodate to the fast-moving contingencies of war, and, as Dewey indicates, many important initiatives such as the provision of American tractors by the government were overtaken by events. Moreover, there is a sense that agricultural policy after 1916 was like rearranging the chairs on the *Titanic*. In micro-economic terms the policy wrought many significant changes, but the aggregate numbers betray the difficulties of attempting to increase food supply in a context when other, variable shortages frustrated the planners' devices.

Dewey expresses the outcome succinctly. Output in 1918 was 7 per cent lower than in 1909–13, home supplies of food produced about the same quantity of calories at the end of the war as in 1909–13 while the food supply of an 'average' man had been reduced by about 3 per cent. In other words the effects of the war were not very dramatic. The social legacy was obviously more profound, especially the transfer of land to the occupiers who did so well out of the war. But perhaps also the tentative approach towards administrative co-ordination, distateful as it had been to farmers in 1919–20, was vindicated in the aftermath of the boom. Intervention came back into consideration as an engine of agricultural prosperity in circumstances very different from wartime, but farmers recalled the good times and hoped for their regeneration. This is altogether an admirable book, clearly presented, thorough and very scholarly.

University of East Anglia B.A. HOLDERNESS

ALEC CAIRNCROSS and NITA WATTS, *The Economic Section, 1939–1961: a Study in Economic Advising* (London: Routledge, 1989. Pp.xii + 372. £40).

At the outbreak of the Second World War no professional economist was employed in any of the central economic departments of the British state. By contrast, today there are now nearly 400 economists in the Government Economic Service. Numbers, however, are not everything, for in recent years there has been a tendency for Ministers to look to City economists and financial journalists for advice rather than to those within their own employ and to the broader academic community. In terms of public policy and public regard, the standing of academic economists is now probably lower than at any time in the twentieth century. For those who lament this regrettable state of affairs, Cairncross and Watts' book will bring much pleasure by returning to what now appears to be a golden age for economists and economic advice. Both authors are, of course, uniquely qualified to write this book. Nita Watts served in the Economic Section from 1941–55, largely specialising in international trade and finance, while Sir Alec was in right at the beginning in 1940, later returning as Director (1961–69) and as Head of the Government Economic Service during the Wilson years (1964–69).

Cairncross and Watts contend that such was the central – and at times decisive – role of the Economic Section in the key elements of economic policy in the 1940s and 1950s that a history of the Section becomes almost inseparable from a history of the formulation of policy itself. Whilst the authors deploy their personal experience of the Section to good effect, and produce many new insights into important macroeconomic issues, this is at the cost of some breadth. Their account of the Section is largely drawn from the official documents in the Public Record Office, supplemented by a few other primary sources (in particular, the all important Meade Diaries, which have now been edited by Howson) and a little secondary literature.

The effect is to isolate the Section both from the political environment in which it operated and from the debates of academic economists who were not insiders. Accordingly, it lacks, for example, the sort of breadth provided by Howson and Winch's *The Economic Advisory Council* (1977), the sole institutional study hitherto of economic advice in Britain. The weakness of their approach becomes particularly apparent in their treatment of episodes like the tax remissions of the 1955 pre-election budget, which, whilst illuminating in many respects and showing that the Section opposed fiscal relaxation, does not provide much needed detail about the relative balance between economic and electoral considerations in budgetary formulation.

The Section was principally concerned with macroeconomic policy advice, and this is reflected in the book, which gives sparse treatment to microeconomic and business issues or even to the microeconomic effects of demand management. Paradoxically, this should interest the business historian, providing corroboration that in the age of high Keynesianism there was much more interest in demand than supply management. Whilst there were economists employed elsewhere within Whitehall (for example, in the Board of Trade and the Ministry of Labour), Cairncross and Watts' study shows clearly that on issues like national income forecasting, where inventories proved problematical and therefore destabilising to policy, government economists needed much firmer industrial information and co-ordination. Indeed, at the macroeconomic level, the poor supply response of British industry was well recognised. Thus, as early as 1953, Robert Hall (Director of the Section 1947–61) correctly anticipated 'stop–go' when he commented that 'We seem to be in a cleft stick . . . If we depress home demand too much, industry stagnates; if we carry expansion beyond a moderate limit, the balance of payments suffers.'

These comments aside, this is a clearly written and fascinating study of an age in which professional economists finally became integrated into government service. Given that many of Britain's leading economists served in the Economic Section (Wynne Godley, James Meade, Austin Robinson and Lionel Robbins to name but a few of the 80 or so before 1961), it is also a unique study of the professional practice of economists. For this reason it would be useful to know more about how government service changed these economists and therefore economics.

University of Bristol ROGER MIDDLETON

REX POPE (ed.), *Atlas of British Social and Economic History Since c.1700* (London: Routledge, 1989. Pp.xiii+250. £45).

In these days when so much is communicated by the visual image rather than the written word, historical atlases, where the text is confined to explaining the maps, the main message of which can often be taken in at a glance, are particularly to be welcomed. They manage to convey most readily the growing mass of statistical material which many students of business history often find difficult to assimilate in tabular form. Most of the contributors to the present volume teach in polytechnics where business history is growing particularly strongly. The editor is Head of the School of Historical and Critical Studies at Lancashire Polytechnic.

Most of these 12 chapters deal with business history either directly: (agriculture; textiles and chemicals; metals, vehicles and engineering; coal, gas and electricity) or indirectly (transport and trade; demographic change; employment and unemployment; education). A particular strength is the contributors' willingness to venture down to the 1980s and to place plenty of emphasis upon the nearer reaches of history which are of much more general concern and with which the earlier maps are to be compared. Regional policy and employment – including female employment – since the 1930s, for instance, are a particularly relevant part of one of the editor's own contributions. Other chapters particularly worthy of note are Peter Dewey's on agriculture and John Armstrong's on transport and trade, a real *tour de force* which not only includes a most useful series of maps showing UK imports and exports on an internationally regional basis in 1770–74, 1866–70, 1908–12, 1933–37, 1955–59 and 1980–84 but also the more familiar growth of the road network from turnpikes in 1750 to motorways in 1986/87, the rise and decline of the railways and even air services. The chapter on labour movements, on the other hand, is distinctly moth-eaten. It looks at trade unions and militancy rather than the labour force as a whole, real earnings or hours of work. Here and elsewhere the northern counties get more than their fair share of attention. Yet London was, after all, the nation's business heart, the particular place where most people worked. The service industries, growingly important, are consequently overlooked. Banking and insurance are ignored, though the chapter on leisure, by Stephen G. Jones (Manchester Polytechnic), whose tragic death has robbed us of a most promising scholar, heads in the right direction. There is also evidence that some of the routine detail of editorship has been scimped. To find one's own initials wrong on page 236 and correct five pages later suggests lack of concentration rather than ignorance; and that prominent urban historian, Dr Corfield, will no doubt be surprised by the misspelling of her name. One wonders how many similar errors there may be which have not been picked up at proof stage. The index, too, is an extraordinary compilation.

This volume is to be compared with the *Atlas of Industrializing Britain, 1780–1914* (no index at all, Methuen 1986), edited by John Langdon and R.J.Morris, favourably in its longer time span but less favourably in its topic range (Langton and Morris's 31 chapters are to be compared with Pope's 12) and in having to sell in hardback alone at £45 whereas Langon and Morris is also available in paperback at £11.95. It is remarkable that two publishers from the same stable have behaved in such an unbusinesslike way. Let us hope that the Routledge part of Associated Book Publishers will give this Pope volume a chance by rushing out a competitively priced paperback without delay. Both atlases are at the same time valuable introductions to the subject and useful works of reference. Both deserve to be within everyone's reach and on everyone's shelves.

London School of Economics T.C.BARKER

TOM BOTTOMORE and ROBERT J. BRYM (eds.), *The Capitalist Class: an International Study* (Hemel Hempstead: Harvester Wheatsheaf, 1989. Pp.269. £9.95).

This is a collection of nine essays, most by sociologists, most drawing inspiration from Marxian perspectives. Bottomore opens with a useful survey of definitions of the capitalist class; Kees van der Pijl closes with an essay about the international capitalist class. In between, seven country-level chapters deal with Britain (David Coates), France (Jane Marceau), the Federal Republic of Germany (Willfried Spohn and Y. Michal Bodemann), Italy (Alberto Martinelli and Antonio M.Chiesi), Japan (Koji Morioka), Canada (Brym) and the United States (Beth Mintz).

For business historians the book has several collective merits. It sharply poses the questions preoccupying the critics of modern capitalism. Is there such an entity as a capitalist class, serving its own sectional interests? What historical developments have produced it? How does it function? How powerful is it? Has multinational business spawned a new class of international capitalists? Second, the limitations of the volume underline the need for rigorous international comparisons of the historical development of business élites. Third, the literature sources appended to each chapter offer a valuable starting point for future students of the topic.

One criticism of the volume must be that although all the country-level essays provide an historical analysis of the rise of a capitalist class, they do not always take account of the work of business historians. Coates on Britain, for example, rests his historical comments on the work of sociologists like Stanworth, Giddens and Scott, ignoring entirely Charlotte Erickson's classic study of steel and hosiery industrialists, W.D.Rubinstein's research on millionaires, or the findings coming out of the *Dictionary of Business Biography*. In her essay on the USA, Mintz neglects the major studies of William Miller, Mabel Newcomer, Edward Pessen and others. As guides to the historical analysis of business leaders some of the essays in this collection are deficient.

This leads to a question on which the essays disagree among themselves. What constitutes the capitalist class? Bottomore defines it as a dominant segment of society and the foundation of its dominance as 'the ownership of the major productive sources of society, which bestows the power to shape and direct the whole social labour process' (p.10). Coates sees those who control a limited number of firms as the core of the capitalist class in Britain, and the whole of that class as numbering perhaps 100,000 people (including dependents). Morioka, on Japan, defines the capitalist class as all individual entrepreneurs, directors, managers and government officials, and comes up with a class numbering 3.5 million (in a population twice the size that of Britain). International comparisons on these bases are impossible.

The other problem with these essays is that class becomes a black box. Interest centres on measuring class size. In few chapters are individual companies named (the essays on Britain and Japan are exceptions) and in fewer are individual entrepreneurs and capitalists held up as examples. There are more references to fellow sociologists than to capitalists in most essays. Unless both levels (class and individual) are explored simultaneously it is hard to see how our understanding of the dynamics of class formation will advance.

Least satisfactory to this reviewer was the last chapter. This argues, often in dense jargon, that multinationals have promoted the emergence of an international capitalist class. Such a view massively under-rates the strength of national rivalries and allegiances. If the author doubts this he should start by examining personal and trading relations between the executives of multinationals based in Japan, the USA and Europe.

Manchester Polytechnic DAVID J. JEREMY

MICHAEL SONENSCHER, *Work and Wages: Natural Law, Politics and the Eighteenth-century French Trades* (Cambridge: Cambridge University Press, 1989, Pp.xi + 427. £37.50).

This book, which is the outcome of a reflection already widely undertaken in several articles, aims at drawing a new view of the world of trades in eighteenth-century France. An iconoclastic ambition, indeed, since it is the very opposite of a French historiographic tradition which has long sustained itself with the ideal picture of trades. What Sonenscher is after, is reality behind its representation. In order to achieve this, he uses a very wide documentation and several new sources. The archives dealing with social conflicts, which take into account only a restricted number of individuals in special circumstances, cannot be sufficient. To understand the daily life, the ordinary, the unsaid concerning the great mass of people, he relies on the registers of corporate labour exchanges which have been kept. On the whole, his analysis is not restricted to Parisian trades, but is extended to the wider range of provincial conditions. The critical study of three lives of artisans enables him to picture the immersion of the world of trades into a wider and more complex environment in which law, natural rights, ordinary economic practice and the interplay of socio-professional relationship intervene. Of this reconstruction with multiple approaches, the reviewer will mention only a few aspects which bring a fully renewed knowledge of the economy of the trades.

Sonenscher rejects the view of the corporations which were supposed to have been only small and self-perpetuating oligarchies. This explanation, which had been largely developed by the Physiocrats on the first attempt at suppressing corporations in 1776, is groundless. Many examples show that these trades were relatively open institutions, renewed by the regular admittance of newcomers from the outside world. It is not only due to corporate regulation, since the process for recruiting new master artisans followed a multiformed pattern in which heredity only intervened partly. Beside the well known part played by marriage, he rightly insists on the network of relatives, friends, customers and especially would-be sponsors. The latter aspect leads him to moderate his opinion as far as the degree of openness of corporations is concerned, since the advantages which the sons of masters enjoyed – even if they were outside the trade – were so obvious. The strong endogamy, which could be noticed here and there among masters, reduced even more the opportunities available for journeymen.

The cliché of the workshop viewed as a small production unit, widely self-sufficient, is also questioned. A very large number of trades were, indeed, part of a productive network, in the frame of a more or less developed division of labour. Hence, a very big number of transactions were carried out among masters of different trades, not directly with customers, and belonged to what Sonenscher calls 'the economy of the bazaar'. The faint limits between trades were even more easily blurred by the frequent resort to sub-contracted work. We are given new views on the size of workshops and the duration of periods of employment, which was often quite short. The close and subtle study of two very important registers of Rouen enables to show the highly-segmented and multiple-structured aspect of local labour market as well as the unsteadiness of the relations between the groups involved.

The analysis of conflicts, which had long been obscured by too systematic (and anachronistic?) an opposition between capital and labour, is renewed thanks to the consideration given to both the interests and the circumstances of those involved. Light is also shed upon the occurrence of conflicts in clusters, which is no longer viewed as a phenomenon arising from the fluctuations in prices of subsistence goods. The explanation for this clustered model of conflicts seen as following a cumulative pattern – one conflict leading to another – seems to be more satisfactory. This very attractive analysis is nevertheless incomplete, since it enables us to explain neither the contour of clustered conflicts, nor the way in which the cumulative process can stop.

On the whole, the myth of the artisan is shattered by this new view of the world of trades. Even if some aspects of this reconstruction remain obscure, the progress is real in many respects. It will be quite impossible, from now on, to study the French workshop economy in the *Siècle des Lumières* without referring to this learned, stimulative and at times provocative work.

Université de Rouen FRANCIS CONCATO

PETER FLORA (ed.), *Growth to Limits: The Western European Welfare States Since World War II* (de Gruyter: Berlin and New York, 1986, 2 Vols., Vol.1 Sweden, Norway, Finland, Denmark. Pp.xxxvi + 363; graphs. DM 158.00. Vol.2 Germany, United Kingdom, Ireland, Italy. Pp.xxxvi + 502; graphs. DM 202.00).

These are the first two volumes of a planned five-volume work. A third volume is to treat four more countries, Austria, Switzerland, the Netherlands and Belgium, a fourth (which has meanwhile appeared) contains various appendices and the last is to consist of a comparative study by the editor. All the country sections are written by individual experts, mostly associated with the European University Institute in Florence, and the volumes contain, on closely printed pages, an enormous amount of information, including graphs, statistical tables and systematised information in tabular form. There has clearly been a tight editorial control, for the chapters each follow the same pattern and sequence down to the tables and graphs.

What are we to say of this mass of evidence? From one point of view, and in all fairness, a comprehensive critical review should wait until the editor has had the opportunity of publishing his own comparative and summarising volume. On the other hand, a number of comments may be made on the basis of the first two volumes alone.

The contributors work in the field of sociology, and historians will regret that the historical introductions are rather sketchy. The bulk of the information relates to the years after 1945, the most critical sections dealing with the 10 years or so preceding the date of publication. It is noteworthy that in spite of differing traditions and political structures, there took place an acceleration of welfare legislation practically everywhere in the 1880s and 1890s and, after some stagnation in the inter-war years, a big leap forward in the 1940s, with continuous expansion since then. This is clearly more than a coincidence. There must have been a considerable demonstration effect at work in Western Europe, if for no other reason than the demands from the political parties and trade unions of the disadvantaged, at least before World War I. As far as the last 40 years or so are concerned, however, it is clear that the political complexion of governments had little to do with the expansion of the welfare services. Even under the Thatcher administration, possibly the most dogmatically opposed to state action of all those described here, the resources devoted to the welfare provisions have continued to increase.

The sequence in which the provisions listed under welfare here – social insurance and benefit payments, education, health – were introduced in different countries differed profoundly, and the causes of these differences are often of interest, but the general trend was unmistakable. Coverage tended to move from specific groups, such as those employed in industry, the aged, the insured, to coverage and to rights acquired on grounds simply of citizenship. It also tended to become more comprehensive in time, and to become more costly.

The similarity of the growth rate of the resources devoted to welfare provisions in absolute terms as well as a proportion of national income which was itself rising quite fast in most countries covered here, was one of the most remarkable phenomena to emerge from the national chapters. The actual levels might differ, from over 30 per cent of GDP in Germany, Sweden and Denmark to something like 20–25 per cent in most of the other countries, but the rise was clearly marked everywhere. There was some statistical correlation with total national incomes (here represented graphically) in the sense that fast economic growth was associated with more generous welfare provisions, though it is not easy to establish this on a year-by-year basis. Moreover, while the dependence of social policies on economic success is unmistakable, they continued even in the period of high unemployment after 1973. As it turned out, most countries succeeded in coping very well with unemployment, on the basis both of insurance and of supplementary social benefits: this, as the study makes clear, can be derived in turn from the fact that national income continued to grow in this period with only at most slight hiccups.

Next to economic fortunes, it is demographic change which has affected European welfare provisions most. The outstanding feature was the rise in the proportion of the elderly on whom an ever increasing share of expenditure was devoted in the form of pensions, additional benefits and greater demands on the health service. Total population growth differed, but was slow in most countries and in Germany it even tended to become negative, but everywhere the school population tended to decline, though the proportion staying on for higher education to rise.

Possibly the greatest surprise will be caused by the international comparison of the redistributive effects on incomes resulting from the sum of all taxation and state-controlled welfare services. The calculations for this were made in a strictly comparable manner for each country, and practically everywhere net income redistribution turns out to have been minimal. It appears that all the progressive taxation as well as the elaborate welfare schemes listed here, did little more than barely counteract the opposite two influences, indirect taxation and educational expenditure, which hurt the poorest and benefitted the richest respectively.

There is much to interest the expert here, on forms of payment and of calculation, on the preference for State schemes against mandatory private schemes, on the administration of the health and hospital services, and the like. For business historians, one of the potentially most significant aspects of the rise of social welfare might be the disincentive effect to effort. This issue is discussed at all adequately only in the British case with its poverty trap. The reason for this was no doubt that, once again, the painfully slow British economic growth, compared with all others except Ireland, if measured against expectations, placed burdens on the British population spared those who were fortunate enough to enjoy faster growth. The British section also has much the best discussion on the problem of defining 'poverty', either in terms of some absolute standard of deprivation, or in terms of an absolute standard which might rise over time, or yet in terms of relative deprivation compared with average income. While, on the latter definition, the poor shall always be with us, it is noticeable that the British essay is much concerned with poverty, whereas the Scandinavians start with the assumption that poverty is on the whole no longer a problem.

Altogether, because of the highly systematised form of presentation, the sheer mass of information coveyed, and the thoroughness of the research which has gone into them, these volumes will be used as works of reference rather than be read through. As such they are highly to be recommended though the absence of an index is to be deplored: perhaps it was intended to include it in volume four. For a more critical and genuinely comparative analysis, together with possible conclusions for policy, we shall have to wait for the appearance of the final volume.

Bielefeld University SIDNEY POLLARD

ROBERT R. LOCKE, *Management and Higher Education since 1989: The Influence of America and Japan on West Germany, Great Britain and France* (Cambridge: Cambridge University Press, 1989. Pp.xiii + 328. £30).

This is an enlightening and erudite book. Anyone still searching for the causes of 'the British disease' (the low rates of growth in output, productivity and embodied technology) will find this revealing reading. For Locke's thesis, over-simplified by this reviewer, is that one of the variables which explain differing post-war rates of growth in Britain, France and Germany is the speed and extent of adoption in each country of a 'new paradigm' in management education. The degree of adoption in turn, was affected, Locke believes, by their cultural heritage – especially educational history and attitudes towards business.

The new paradigm which Locke identifies comprises the application of scientific methodology to business education, especially new mathematical/statistical techniques such as operations research, game theory, linear programming and set theory. Although this new paradigm met with some resistance from the non-mathematicians who taught current best practice, it soon became dominant. Originating in the USA in the 1940s, the new paradigm was a function of wartime scientific work, for example on combatting submarine warfare, codebreaking and the atomic bomb. It was reinforced by the government's need for economic efficiency in the Cold War, and by American corporations' demand for technically skilled managerial staff. This resulted from their early adoption of the M-form, because of their size and diversity of products, which in turn brought in outside institutional investors retaining specialist stockbrokers who insisted on dealing with technically-trained managers.

Needless to say, Britain seems to have been the least successful of the three European countries studied by Locke in its adoption of the new paradigm. He explains this in terms of the cultural heritage such as the low status of engineering and business in the UK; the cult of the amateur which meant British business leaders often had neither specialised university education nor relevant post-experience education; the grip of the professions which until very recently placed emphasis on practical experience and on-the-job training rather than an academic or scientific education; the gulf between academics and business practitioners; and the elitism of Oxbridge which eschewed management or business education more heartily than other universities. Even the MBA in Britain is perceived by Locke as working against the interests of economic growth, as it diverted technical and production specialists away from manufacturing into consultancy, the City and financial areas.

Germany was the most successful in harnessing the new paradigm of management education to economic growth, because there was a greater emphasis on welding scientific, degree-level education to practical problems, and a rapid adoption of the new mathematical techniques underpinning this new paradigm, This led to highly educated, production-orientated managers who insisted on quality of design and product. The French, as on so many other issues, were somewhere between Britain and Germany.

This book is closely argued, wide ranging and full of insight into post-war business education practice in the three countries. This review cannot do justice to either the level of detail or intricacy of the argument. Inevitably, because he is drawing cross-cultural comparisons there are points at which this reader felt the basis of comparison was unfair, but Locke shows himself to be fully aware of such problems and does the best he can with the material available. In some places, too, issues dealt with at length for one country were more sketchily covered for one of the others. In places there are minor mistakes. But these are pecadilloes. This is a must for anyone trying to understand post-war management education, bringing together a whole range of issues. Locke offers no easy solutions. Quite the contrary. He shows that the dead weight of the cultural past can have a massive impact on preventing full exploitation of new techniques and paradigms. His belief that a sense of community is a superior basis to individualism on which to organise advanced industrial society may help to explain the rise of Japan but holds little hope for benighted Britain.

Ealing College JOHN ARMSTRONG

JAMES F. WILLIS and MARTIN L. PRIMACK, *An Economic History of the United States* (Englewood Cliffs, New Jersey: Prentice Hall, second edition, 1989. Pp.xxiii + 455; illus.; maps. £41.40).

The second edition of *An Economic History of the United States* joins a bevy of economic history texts available to those who teach a survey course on the United States. In deciding whether to assign one book as essential or to list a number of books which offer similar end-products or an adequate coverage of facts and interpretations, lecturers use differing criteria. For Americanists the choice depends on whether they prefer economists or historians as authors, whether the treatment is topographical or chronological, whether the text has been written as a book or has been pieced together from lecture notes, how clear is the prose and interpretation, how much recent research has been incorporated into the writing and the bibliography and how accessible the price is to the student market. Willis and Primack successfully meet several criteria, but have fallen short on others.

They aim to describe American economic development from colonial times to the mid-1980s using the dual themes of choice and change. In detailing how the nation was transformed from a small backward economy into the world's leading country they opt for the chronological approach. Their overall chronology is clear, but within each broad period the divisions falter between the historians' pure chronology and the economists' preference for topics and sectors. The early national period, for example, falls into two chronological sub-periods of the 1780s and 1793–1815, but the antebellum era of 1815–1860 is divided into three chapters along regional and sectoral lines. The broad time span between the end of the Civil War and the end of World War One has a chronological break at 1897, with each sub-period divided into two differing sectoral approaches while the international arena stretches from 1850 to 1920. Economic developments do, of course, lead to differing emphases in different time-periods, but the uninitiated reader must be perplexed by the post-1920 years. The 1920s and the 1930s each warrant separate treatments, while the ensuing decades are coupled together in two chapters with the 1980s left much in the realms of speculation. For the years after 1940 the macroeconomic sweep is clearly preferred though it does not sit well with the sectoral dominance of the late nineteenth century.

As economists, Willis and Primack use theory and quantitative methodology in presenting their interpretation. Basic economic theories and models are explained in the course of the chronology, as for example import substitution at the time of the Revolution, transport costs and integration in the early nineteenth century or the welfare effects of monopoly in the early twentieth century. The contributions of economists and econometricians of both the old and new vintage weigh much more heavily than the contributions of historians. There is also a glossary of economic terms because economists have a distinct language for their communications. With such an emphasis, even though the authors are concerned with the interrelationships among political, social, cultural and economic events, the overwhelming impact is that of economics, as witnessed, for example, in the treatment of labour. Workers are viewed through the institutional mechanism of unions rather than as a product of their workplace, their community, their class or their sex. There is little acknowledgement of the new labour history let alone the even newer women's labour history.

As economists, Willis and Primack write clearly and for the most part precisely. There is none of the historian's murkiness in hiding behind subtle prose. When the outcome of an historical controversy is unresolved then it is stated as such. Clarity is a necessity, for the prime audience is the American undergraduate, and while some British students will doubtless approve of the down-to-earth approach others will decry the lack of subtlety and the intrusion of listed points which reads like lecture notes. The end-of-chapter questions also smack of term tests.

It is impossible to produce a text to suit all audiences because college courses differ markedly. American academics 'team up' to write their surveys in order to capture a larger market. This duo combination has been and will be as successful as most authors working out of a large publishing house. Updating their first edition throughout and including new sections on immigration and a stronger emphasis on money and monetary institutions, they offer both clarity and a good coverage of topics. The book deserves to be included in undergraduate reading lists as one of a choice of reliable and worthwhile texts, but its price is likely to ensure that it is borrowed from libraries rather than bought by students.

University of Birmingham MARGARET WALSH

JOSHUA B. FREEMAN, *In Transit: the Transport Workers' Union in New York City, 1933–1966* (New York and Oxford: Oxford University Press, 1989, Pp.xii + 434. illus. £27.50).

Joshua Freeman has written a classic labour history, one which places the trade union development among the New York transit workers in both its workplace and its urban community contexts. The book is a detailed study of the rise, stagnation and later progress of the Transport Workers' Union between 1933 and 1966. It also provides a background to this with a discussion of earlier attempts to unionise this industry including the Knights of Labor in the 1880s to 1895.

It is very well written and tells a fascinating story. Yet as history it is very rich. Freeman has used a range of archival and printed sources, and supplemented them with interviews with 31 people. These included six interviews with Maurice Forge, one of the key figures of the union's early days. Freeman has used his sources with skill and provides a detailed, yet often exciting account of the men who played the major part of building and running the union. The backgrounds of the early trade union organisers are especially interesting. They range from Douglas MacMahon, whose early steps along the route to being a stockbroker ended with the Wall Street Crash, to Thomas O'Shea, who had been active in Ireland in the IRA, blowing up police stations between 1917 and 1924.

But its richness goes much further than this. It provides a careful analysis of the work available for various immigrant ethnic groups, and how ethnicity and their place in the labour market affected workers' willingness to unionise. He shows how management policies before the 1930s often depended on a large reserve of labour.

Freeman's examination of the significance of ethnicity is not glib. On the Irish, the major group involved in the Transport Workers' Union, he discusses how Irish Society helped stability and the status quo – yet he shows the significance of workers gathering behind major Irish personalities, especially those linked to Clan na Gael. Irish workers who had fought against the British and in the Irish Civil War were not easily cowed by employer intimidation and even employer-inspired violence. Such men could build a union network in secret, by small cells of supporters and by constant changes of meeting places just as the IRA had organised, thereby lessening the impact of company informers.

Freeman also shows how the Communist Party operated in the union. The Communist Party decided in 1933 to organise transit workers, and its members also organised systematically. Its methods were compatible to that of the Irish cells. Freeman shows how and why the two groups came to dominate the union.

The fact that its leaders were members of the Communist Party was kept secret until 1948.

Another merit of the book is linking the growth of the union to urban and national politics as well as economic change. As in Britain, the development of unions in the municipal sector was greatly aided by working-class leverage on local politicians. This was important in the 1930s, when those in public office were increasingly unsympathetic to corporations union-busting. Freeman points to one Irish judge who was unlikely to break a union with a large Irish membership when that judge needed the support of the Irish community. Hence the book contributes to an understanding of urban dimensions of the New Deal era.

In short it is an excellent study of a major urban trade union, of the urban and workplace politics of the Irish and other ethnic groups in New York, of American Communist Party tactics in trade unions, of the bad working conditions and the labour policies of management in the New York transit industry. I have seldom read an academic book with greater enjoyment or with greater admiration for the author's skill in presenting his findings.

Nottingham University CHRIS WRIGLEY

ROBERT GROSSE, *Multinationals in Latin America* (London: Routledge, 1989. Pp.xiv + 265; maps £40).

The contribution of foreign direct investment (FDI) to host-country welfare and therefore the desirability of attracting multinational enterprises (MNEs) has long been a contentious issue, generating a substantial body of theoretical and empirical work. The activities of MNEs in Latin America, particularly from the US, have generated a disproportionate amount of this literature, reflecting in part the sensitivity to manifestations of US economic and political power in the region. MNEs have in the past been seen to be more than just passive participants in the local economy and they continue to engender suspicion as a potential challenge to national sovereignty. The relationship between company and nation state is characterised by a baleful mutual distrust, despite geographic and economic symbiosis, well beyond that expressed by Servan-Schreiber in *Le Defi Americain* concerning the post-war economic challenge of US FDI in Europe.

The basic theme of *Multinationals in Latin America*, the latest in Routledge's International Business series, is that the nature of MNE activity in the hemisphere is the outcome of a constrained bargaining process with host-country interests. MNEs and local firms – including large family conglomerates, and state-owned firms – are perceived as competitors for economic and political power, each with conflicting objectives.

The book is divided into four sections. Part one provides a brief history of MNE activities in Latin America, an overview of theories of the MNE and a discussion of recent trends in FDI in Latin America. Part two tackles the macroeconomic environment, including the government-business relationship, the economic impact of FDI in Venezuela, the effectiveness of the Andean Pact and the transfer problem of Latin American debt. Part three covers corporate strategies, the competitive advantage of MNEs, their structure and strategy in Peru and internal financial transfers. Part four provides case-study evidence from the Latin American chemicals industry, a discussion of state-owned MNEs and concludes with an outlook for foreign MNEs and FDI.

It is Grosse's intention to demonstrate that the bargaining approach offers a useful analytical methodology of MNE activities, and this technique would seem appropriate given the history of FDI in Latin America in this century. A necessary, but insufficient, prerequisite for commercial success is a good relationship with government. This relationship is likely to be dynamic, reflecting fluctuations in the relative strengths of the key interest groups and the ability of government to change the rules of the game. The debt crisis is the latest stage in this cycle, strengthening the bargaining power of the MNEs at the expense of indebted governments. Grosse's conceptualisation of the bargaining problem, while dynamic, is however, simplistic in that it lacks a game theoretic dimension in what is, post-commitment, a long-term repeated bargaining process.

Despite its title and the inclusion of case-study chapters, the book does not provide a substantive analytical treatment of the nature of MNE activities in Latin America. The microeconomic aspects of the determinants of FDI and, in particular, firm strategy are applied sparingly to the case-studies. A test for an inverse relationship between the number of subsidiaries and the prevalence of joint ventures in chemicals takes no account of inter-company, inter-product or inter-country differences. MNE (as opposed to FDI) data are sparse; global sales are the only indication of size in the chemical industry case-study. Tables ranking companies by size significantly understate the aggregate activities of companies such as Nestle by including subsidiaries individually.

The general tenor of *Multinationals in Latin America* is that the relationship between state and MNE will continue to be fraught, partly as a consequence of unstable bargaining conditions. The strength of this book lies in the chapters adopting a more macroeconomic approach to the subject matter. The book provides a well-argued overview of the interdependence between political and economic objectives in Latin America and the impact upon the competitive environment. This includes chapters devoted to the historical background of FDI in Latin America, the debt problem and its likely impact on attitudes towards FDI, the regulation of FDI through the Andean Pact, the significant role of state-owned firms and the influence of family-controlled conglomerates. As such, it constitutes a useful background source on the operational environment in Latin America.

Lancaster University ROBERT READ

R.G. Gregory and N.G. Butlin (eds.), *Recovery from the Depression: Australia and the World Economy in the 1930s* (Cambridge: Cambridge University Press, 1989, pp x + 378; figures and tables. $25.00).

Studies of the cataclysm of the Great Depression in one society generally have a value for other analogous nations; this study of Australia's recovery from the greatest of all economic slumps is no exception. This work consists of 15 separate essays by different historians, placing specifically Australian themes in the context of an international comparative perspective. Barry Eichengreen's 'The Australian Recovery of the 1930s in International Comparative Perspective' was especially valuable, as were two similar essays, T.J. Hatton's 'The Recovery of the 1930s and Economic Policy in Britain' and 'A Macro Interpretation of

Recovery: Australia and Canada' by Alan G. Green and Gordon R. Sparks. Other comparative studies of New Zealand, by G.R. Hawke, and Japan, by Yasukichi Yasuba – the latter added, in the editors' words 'out of sheer curiosity' – also add to the value of this book to economic historians elsewhere. These comparative essays, often touching only tangentially on Australia, are valuable in their own right and make useful reading for anyone desiring the latest and most comprehensive view of the Depression in the countries discussed. A very wide range of topics within a specifically Australian framework are treated in the other essays in this book, ranging from Australian budgetary policies (J.J. Pincus), Australian manufacturing and the recovery (Mark Thomas) and the effects of unemployment insurance (G.D. Snooks). The book thus contains two separate underlying themes: Australia's recovery from the Depression and a series of national comparative essays, which will strike some readers as ill-considered. Yet I think the majority of readers will find that the originality and value of essays on both themes outweigh their heterogenity. Business historians too may be disappointed by the relentlessly macroeconomic approach to the subject adopted by all the essayists, with little or nothing in the way of specific examples of the success or failure of firms or entrepreneurs. They are also likely to find the econometric methodology employed by several of the historians daunting and difficult to assess.

The effects of the Depression in Australia, though obviously very great, were, in severity, about midway between Britain, where many indices demonstrated remarkably little in the way of downturn, and the more catastrophic effects produced in the United States and Canada. As in Britain, Australia's response to the Depression was in the main orthodoxly deflationary, with major cuts in government expenditure, side-by-side with an easy money policy, combined with tariff increases. Yet in his interesting introductory 'overview', R.G. Gregory argues that in all likelihood 'government policies do not contribute a great deal to the variations in the speed and extent of recovery' (p.24) and 'government policy played a negligible part in the differential rates of recovery' (p.25). Nor, in the Australian context, did any expansion in manufacturing industry or public works job-creation programmes. One of the few essayists to provide a clear-cut theory of recovery is Eichengreen, who sees a positive relationship between falls in real wages in 11 countries and a tendency for industrial production to decline relatively less rapidly. This was particularly relevant to Australia, where wage awards were often decided by independent arbitration by the Commonwealth. Similarly, B.R. Davidson's essay on 'Agriculture and the Recovery from the Great Depression' suggests that rural exports were disproportionately important in Australia. Terms of trade worked very invidiously against Australia, while job sharing was less important in Australia than in North America. The editor's main conclusions, however, do not point to any compelling or straightforward explanations for recovery in Australia or elsewhere, beyond 'the rubber band effect' (p.25) – in other words, what goes down must sooner or later come up.

Deakin University W.D. RUBINSTEIN

FRANCES BOSTOCK and GEOFFREY JONES, *Planning and Power in Iran: Ebtehaj and Economic Development under the Shah* (London: Frank Cass, 1989. Pp.xi + 238. £22.50).

Abol Hassan Ebtehaj emerges from the pages of this interesting and well written book as one of the key figures in the economic modernisation of Iran. He began his career in the employ of the British-owned Imperial Bank of Persia in 1920, leaving in 1936 only when that conservatively and unimaginatively run institution refused to promote him to senior management level because he was a 'native'. He then entered the service of his government, and, as one of the very few competent, honest and experienced financial administrators available to it, he quickly made his mark, impressing the foreign diplomats and bankers with whom he came into contact not only as quite different from the general run of Iranian officials, but as exceptionally intelligent, able and well informed by any standards. By 1942 he had become governor of the Bank Melli, Iran's fledging central bank, a position from which, later in the decade, he was able to conduct a successful campaign to reduce the power and independence of the Imperial Bank, in the pursuit of his belief that foreign-owned concerns should be obliged to operate only in ways which would bring the maximum benefit to Iran, rather than to their foreign shareholders. This was a campaign which in many ways foreshadowed the more famous battle between the Iranian government and the British-owned oil company, AIOC, which culminated in the early 1950s.

Ebtehaj's main contribution to the modern history of Iran, however, was as the creator of institutions needed for modern economic management and the sustained modernisation drive of the 1954–79 period, and for lack of which the earlier industrialisation programme of Reza Shah in the 1930s had floundered so badly. Between 1942 and 1950 he turned the Bank Melli from a relatively weak and ineffective institution, permeated with all the ills associated with favour and patronage which afflicted other aspects of Iranian bureaucracy, into a highly professional and internationally respected central bank, independent of political interference and playing the leading role in management of the currency, exchange control, credit policy and so on. And once the Second World War was over he also played a critical role in converting the Shah and his ministers to accept the need for economic planning – as opposed to unsystematic government intervention in the economy, of which there had been all too much in the 1930s – his philosophy in this respect deriving more from his own experience as Controller of State Owned Companies in Reza Shah's later years than the example of the Soviet Union. Then, after an absence abroad (1950–54) as Iranian ambassador to Paris and with the IMF in Washington, he was himself appointed as director of the Plan Organisation, a post which he retained until 1959. During these years he reformed and immeasurably strengthened the Organisation, insisting on an extraordinary degree of independence from political interference, prepared the second Seven Year Plan which laid the foundations for the economic achievements of the 1960s and 1970s, and maintained an effective control over its implementation. In the end, however, Ebtehaj lost the personal support of the Shah, perhaps because, as the latter's autocratic tendencies increasingly asserted themselves, he ceased to be willing to tolerate the Plan Organisation as a sort of alternative government. And without the support of his sovereign, Ebtehaj, with no independent power base, was doomed.

Frances Bostock and Geoffrey Jones prepared this book with the full co-operation of its subject, and derived evidence from the oral testimony of those who knew and worked with him, as well as from conventional historical sources, but it is not an *apologia* for Ebtehaj, let alone a piece of hagiography. The subject's faults and limitations, as well as his abilities and achievements, are discussed, but when the balance is struck there is no doubt that the latter far outweigh the former. There is much more in this book than a brief review can reveal, and not only for the economic history of modern Iran. Anyone interested in the conflict of values and traditions in non-western societies undergoing 'modernisation'; in the genesis and progress of economic planning; or in the reasons for the fall of the Shah in 1979, will find the work to be fascinating reading.

University of Bristol CHRISTOPHER CLAY

NORMA J. CHALMERS, *Industrial Relations in Japan: The Peripheral Workforce* (London and New York: Routledge, 1989. Pp.x + 283 £30).

The sub-heading of this book 'the Peripheral Workforce' is a reminder of the importance of a large body of the Japanese labour force which does not enjoy the privileges of a life time's employment in one of the large prestige concerns. Norma Chalmers sets out to enlighten her readers on those workers whose employment includes those in full-time employment but also those whose work can be seasonal, temporary and part-time. Business historians will find her clear and confident exposition of value. The figures and tables are also helpful.

The five carefully chosen case studies on which the book is based are a steel fabrication plant in Chiba near Tokyo, a manufacturing company at Saitama, in Tokyo, and three industrial workshops near Nagano, over 100 miles north west of Tokyo. Looking only at the analysis given of the steel fabrication company it is clear (Table 5.1) that the company employs a total of 20 work people including the owner. In addition there are seven internal sub-contractors who perform seven necessary yet separate functions – and employ 24 people. Each small group is vital to the process, all are interdependent. Clearly there are difficulties from time to time. But interestingly enough the bonuses, used so much in Japan, are paid to all by the 'parent' company.

Ultimately this book is about *Kanban*, the 'just in time' system developed by Japanese industry to ensure that a new supply of parts arrives for manufacture at precisely the time that the old supply is exhausted. Figure 4.1, (p.126) the '*Kanban* implementation path' illustrates the important stages, ensuring high flexibility, being geared to small batch production, incorporating foolproof quality control and looking out for defects and troubles and signals faults. Only firm orders are accepted before production. The results of this method of operating, if all goes to plan, is 'stock none, leadtime none, defects none'. The small peripheral firms discussed here are the last stop in this system.

University of Glasgow OLIVE CHECKLAND

PETER DENLEY, STEFAN FOGELVIK and CHARLES HARVEY (eds.), *History and Computing II* (Manchester: The University Press, 1989. Pp.xi + 290; maps. £29.95 hardback, £9.95 paperback).

This is a collection of 28 contributions to the second conference of the Association for History and Computing, held in 1987. There was no single theme for the conference, so there is a wide range of subjects, namely methodology (2), education (2), databases (4), expert systems (2), quantitative analysis (2), demography (4), the economy and society (4), politics (3), and regional data banks (5). The geographical range is pleasingly European, with fewer than half the papers about specifically British topics. The purpose of the contributions is to report how some researchers and teachers have approached some historical topics using computing techniques. The book is not therefore a practical guide, nor is it textbook of historical computing. Most essays combine some theory, some technical account of packages or methods used and some historical conclusions. No one, other than a reviewer (or the editors!), would want to read it all.

Response to a collection as wide as this is necessarily personal. There is not much business history here for example, so a reader looking for inspiration or instruction on a particular historical topic is likely to be disappointed. On the other hand, readers interested in new methods might well be able to see parallels here with their own interests. Personally, I found the sections on expert systems and databases the most rewarding. That on expert systems is a good example of interesting new developments which will not necessarily be used until there is more technical skill in the history profession, with faster hardware and better software; this may not be for a long time. The article by Carvallo (number 10) points the way ahead. His problem was to reconstruct communities from partial and scattered data. He rightly points out that databases are not the ideal tool for nominal linkage although they are often treated as if they were. In an expert system there is more flexibility to work with uncertain data and uncertain rules of reasoning; there is also an encouragement to define rules to decide on solutions to a problem, in this case the links between family and other people in a community; but expert systems are hard to build and, as Carvallo points out, a full expert system would require specialised (rare and expensive) programming staff. But an expert systems or artificial intelligence language like PROLOG can cover record linking, life-story reconstruction, family linkages and community network reconstruction. I found this exciting because it points the way ahead to when historical computing is not dominated by databases and quantitative methods.

Databases, on the other hand, are well established for solving historical problems, often by listing and cross referencing data that would be too bulky to handle manually. The nine articles here about them, and their high profile in teaching, show how much historians rely on them. They necessitate some appreciation of data analysis, nicely covered here in two articles, one by Philip Hartland and Charles Harvey, the other by Lou Burnard.

In reading and browsing in the collection, I found two things annoying. One was the limited range of some of the sections; for example all the political contributions were about voting patterns. This reinforces the view that computing is about numbers; it is not and there are some very exciting new possibilities in the use of text-based systems and concordances for the analysis of people's writings. Secondly, I do not agree that history and computing is a widespread and common part of historical studies. Even word processing is still not expected of academics, research students or undergraduates. Computing is probably more threatening and more difficult for many people than advocates of its widespread use are aware. Perhaps, as an adviser, I see how hard some people find it to use even simple word processing techniques, let alone databases, expert systems, desk top publishing and statistics packages. I find it depressing that historians (and others in arts subjects too) are divided between the few, who know a lot about some aspect of computing and have the reputation as 'experts', and the many, who know little and have been known to care less. A book of this kind cannot, and should not be expected to, address the problems of the 'many'. Perhaps I, as an adviser, should.

I would not like to end on a negative note, for this is a very good book and I recommend everyone to look at it, whether or not you use computing, because it will excite, stimulate, inform and annoy; the latter more than the former.

St. Andrews University LORNA WEATHERILL

RICHARD M. CYERT, *The Economic Theory of Organization and the Firm*, (New York, London: Harvester Wheatsheaf 1989. Pp.xv + 248, £28.50).

Cyert's academic career has centred on developing a theory of the firm (or department) which explains behaviour in terms of rules and goals, such as mark-ups and sales objectives, to which decision makers would admit. In doing so, Cyert has been concerned to expose what he regards as the inadequacies of the neo-classical approach, based on maximising behaviour. He has acquired a good deal of experience in how companies operate by holding directorships in ten of them.

This volume is a collection of 14 essays, beginning with a piece on the pricing of the cigarette, motor and potash industries over the trade cycle, first published in 1955. The principal interest for business historians in this volume is the alternative organizing framework for business behaviour that Cyert attempts to supply. Those who have tried to explain corporate decisions from company records will agree with the ditty 'no businessman observes/a world of intersecting curves' and often may have despaired that the neoclassical theory of the firm could provide any insight at all for their work. Cyert emphasises that real firms engage in search and information gathering because their decisions are taken in conditions of uncertainty, in which the notion of optimising is a contradiction. However, this contradiction applies only to *outcomes*, not to the decision itself. Decision makers can optimise with respect to their beliefs about the probability distribution of outcomes, even though they cannot see which outcome will occur. As long as it is the *decisions* that are to be explained, there is no problem in principle.

What I missed in this collection was any discussion of the 'strategy and structure' literature, either that of O.E. Williamson or Chandler, of neo-classical search literature, or of the work of Sah and Stiglitz (published in 1985 and 1986) on the internal structure of economic organisations. Each of these has something to contribute to the problems which Cyert identifies and which business historians also face. None of them is a philosopher's stone but each is a move in the right direction. It is easier to criticise an explanation or a theory than to provide a better one. The reaction in business history to the difficulties of finding an adequate theoretical framework can be merely to describe a sequence of events obtained from the sources and then, because they are ordered by time, to imply that the ordering is a causal one. This is unfortunate because a good theoretical framework not only suggests a causal nexus but directs attention to sources, institutions and decisions which otherwise might remain unnoticed.

Both business historians and those concerned to construct 'realistic' models of firms share a major problem; that burrowing in archives and participating in business decisions are immensely time consuming. The time available for theoretical speculation and keeping up with the literature is severely compressed. While greater cross-fertilisation with other ideas might improve this work, business historians unfamiliar with Cyert's work will benefit from reading some of these essays.

University of Hull JAMES FOREMAN-PECK

BOOKS RECEIVED

SIMON P. VILLE *English Shipowning during the Industrial Revolution: Michael Henley and Son, London Shipowners, 1770–1830* (Manchester: Manchester University Press, 1990. P/b edition. Pp.x+192. £12.95).

GARY GERSTLE *Working Class Americanism: The Politics of Labour in a Textile City, 1914–1960* (Cambridge: Cambridge University Press, 1989. Pp.xii+356. £27.50).

GAVIN REID *Theories of Industrial Organisation* (Oxford: Basil Blackwell, 1989. Pp.234. P/b edition. £12.95).

BENJAMIN K. HUNNICUTT *Work Without End: Abandoning Shorter Hours for the Right to Work* (Philadelphia: Temple University Press, 1989. Pp.x+404. $34.95).

R. HELLER *The Making of Managers* (London: Penguin, 1989. Pp.xiv+257. £5.99).

JONATHAN BROWN *Agriculture in England: A Survey of Family, 1870–1947* (Manchester: Manchester University Press. P/b edition, 1990. Pp.xi+160. £9.95).

GRANT T. HAMMOND *Counter Trade, Offsets and Barter in International Political Economy* (London: Pinter Publishers, 1990. Pp. xiii+186. £30).

J.E. BURNETT and A.D MORRISON-LOW *Vulgar & Mechanick: The Scientific Instrument Trade in Ireland, 1650–1921* (Dublin: Royal Dublin Society, 1989. Pp.ix+166. £15).

A. BURD and H. NABB *Stoking Up the Past* (Plymouth: British Gas plc South Western, 1989. Pp.64. £3.00).

JANET MACGAFFEY *Entrepreneurs and Parasites: The Struggle for Indigenous Capitalism in Zaire* (Cambridge: Cambridge University Press, 1988. Pp.xiii+241. £27.50).

J. HASSARD and D. PYM(eds.) *The Theory and Philosophy of Organisations: Critical Issues and New Perspectives* (London: Routledge, 1990. Pp.x+274).

Erratum:

M.L. TREADGOLD *Bounteous Bestowal: The Economic History of Norfolk Island* (Canberra: Australian Natural University, 1988. Pp.xvi+317. A$20) erroneously appeared in Books Received for January 1990 as *Bounteous Bestowal*: The *Economic History of New York Island.*

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